Instruction Manual

PUX2
PC LOADER SOFTWARE
INSTRUCTION MANUAL

Dwyer Instruments, Inc. Bulletin F-9-PUX2-S

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(*) This manual is subject to change without prior notice.

1. OUTLINE

1.1. COPYRIGHT OF THIS SOFTWARE

- The copyright of this software belongs to the manufacturer. No part of this software may be reproduced or transmitted in any form.

1.2. GENERAL

- Using this software, you can set, read and display relevant graphs of the PUX2 on your PC easily.

1.3. SYSTEM REQUIREMENTS

1.3.1. PC main unit

- AT compatible-type with CPU Pentium IV 1 GHz/Celeron 1 GHz or more installed, display resolution of 1024 × 768, and use of small font recommended and CD-ROM drive.

1.3.2. Memory capacity

- 128 MB or more (256 MB or more recommended) [52 MB memory or more for free space required]

1.3.3. Interface

- More than one USB port is necessary.

1.3.4. OS

- Microsoft Windows 2000 Professional (SP4 or more)
- Microsoft Windows XP Professional (SP2 or more)
- Microsoft Windows Vista Business: Use it in Basic mode.
  It is not available for Windows Aero.

1.4. SCOPE OF DELIVERY

CD-ROM: 1

- Setup disk: Installing software to PC
- Instruction manual

2. INSTALLING OF SOFTWARE

2.1. Installing Microsoft Windows Installer 3.1

Note) this software is not required for a PC in which "Windows Installer" ia already installed.

(1) Insert the setup disk into the drive, and double-click “WindowsInstaller-KB893803-v2-x86.exe” in the WindowsInstaller3.1 folder.

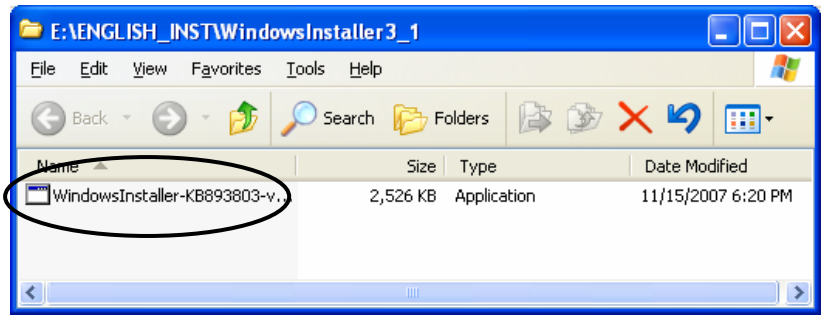

E:\ENGLISH_INST\WindowsInstaller3_1
File Edit View Favorites Tools Help
Back Search Folders
Name Size Type Date Modified
WindowsInstaller-KB893803-v... 2,526 KB Application 11/15/2007 6:20 PM

Fig. 2-1 File Installation

(2) Setting wizard will start up. Click the [Next] button.Click the [Cancel] button to cancel the installation.

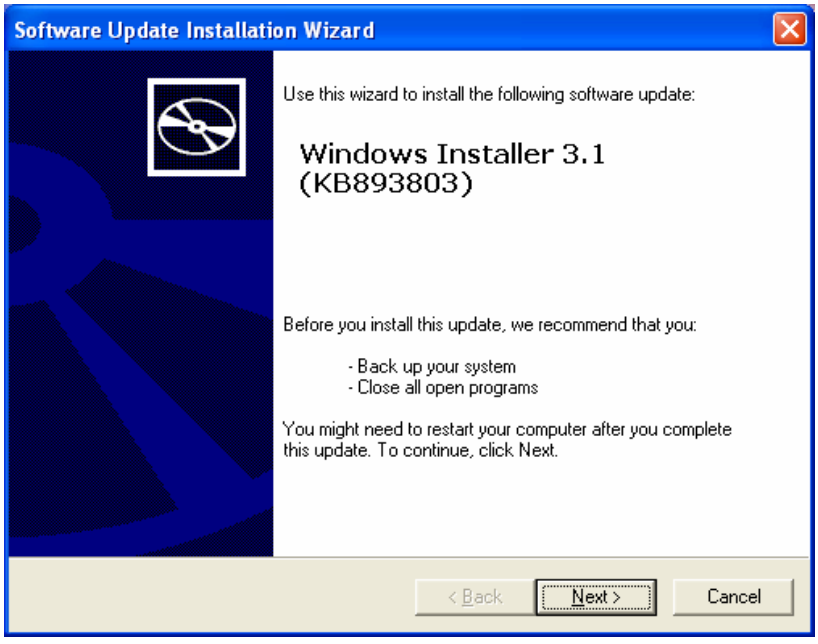

Software Update Installation Wizard
Use this wizard to install the following software update:
Windows Installer 3.1
(KB893803)
Before you install this update, we recommend that you:
- Back up your system
- Close all open programs
You might need to restart your computer after you complete this update. To continue, click Next.
< Back
Next >
Cancel

Fig. 2-2 Wizard screen

(3) There is a prompt about the License Agreement, check the [I Agree] and click the [Next] button.Click the [Cancel] button to cancel the installation.The [Back] and the [Print] buttons are not used here.

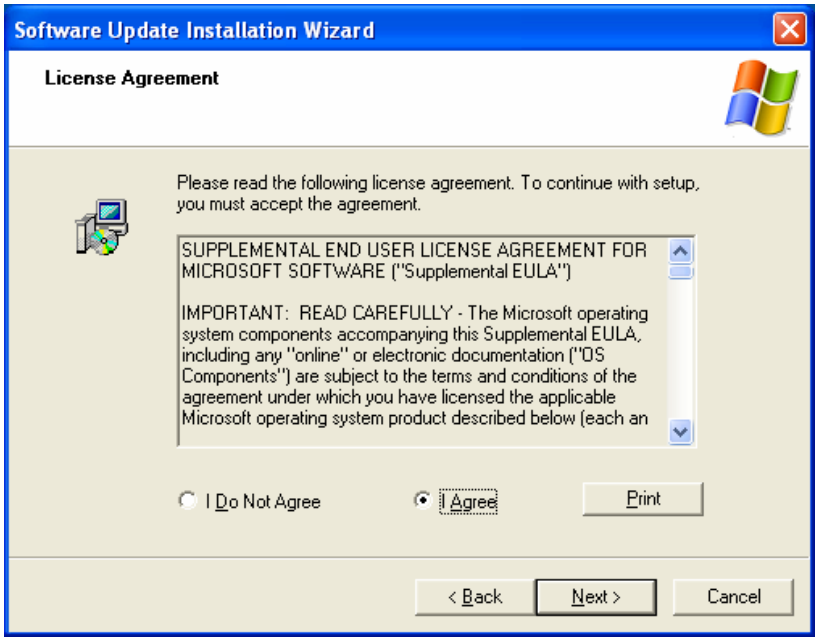

Software Update Installation Wizard
License Agreement
Please read the following license agreement. To continue with setup, you must accept the agreement.
SUPPLEMENTAL END USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE ("Supplemental EULA")
IMPORTANT: READ CAREFULLY - The Microsoft operating system components accompanying this Supplemental EULA, including any "online" or electronic documentation ("OS Components") are subject to the terms and conditions of the agreement under which you have licensed the applicable Microsoft operating system product described below (each an
I Do Not Agree
I Agree
Print
< Back
Next >
Cancel

Fig. 2-3 License Agreement screen

(4) System update screen is displayed. Wait until installation is completed.

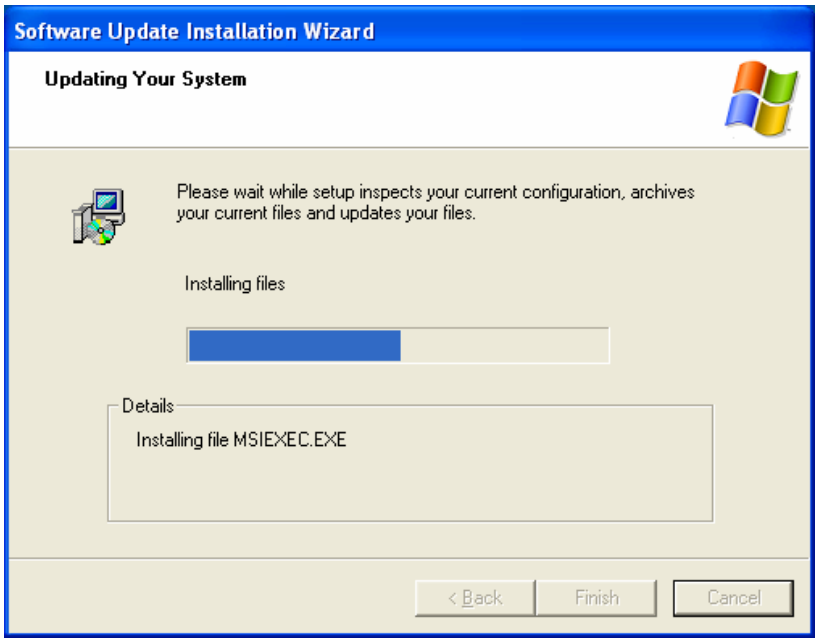


Fig. 2-4 Updating Your System screen

(5) After installation, the installation complete screen appears. Check the “Do not restart now”, click the [Finish] button. That is the end of installation for Microsoft Windows Installer 3.1.

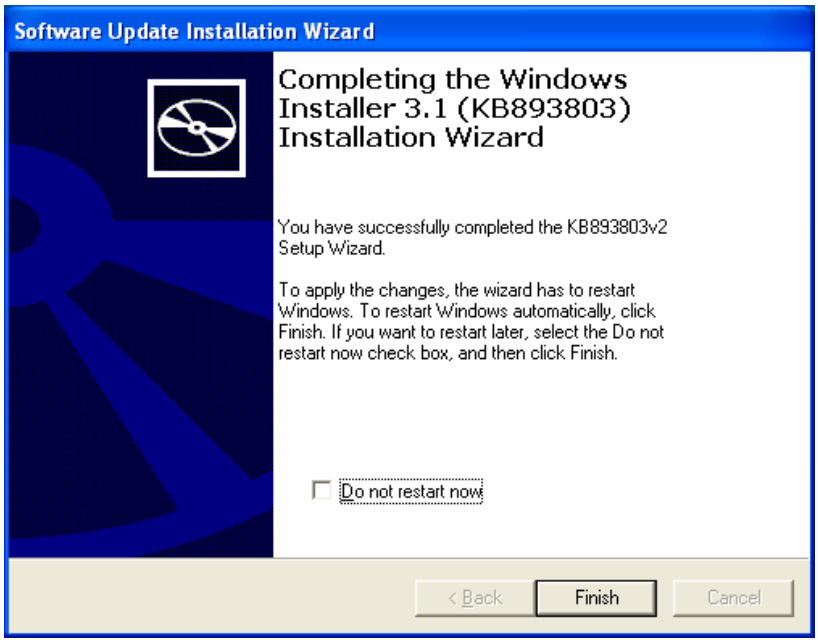

Software Update Installation Wizard
Completing the Windows Installer 3.1 (KB893803) Installation Wizard
You have successfully completed the KB893803v2 Setup Wizard.
To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.
Do not restart now
< Back
Finish
Cancel

Fig. 2-5 Install Complete

2.2. Installing Microsoft .NET Framework Version 2.0

(1) Insert the setup disk into the drive, and double-click “dotnetfx.exe” in the FrameWork2.0 folder.

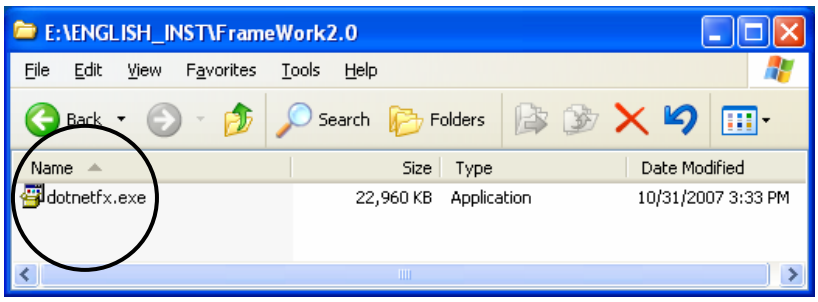


Fig. 2-6 File Installation

(2) Setting wizard will start up. Click the [Next] button. Click the [Cancel] button to cancel the installation.

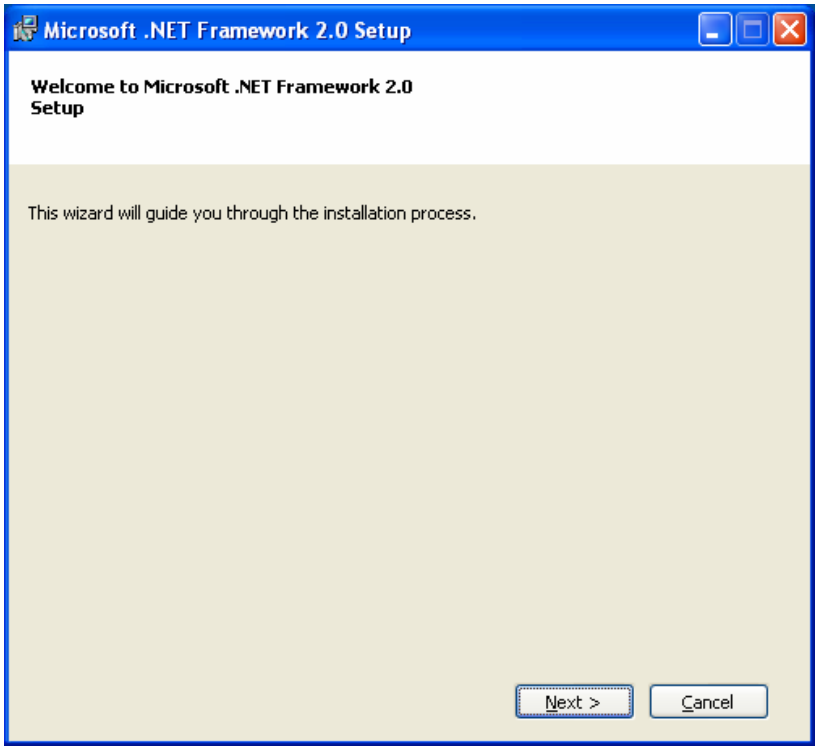

Microsoft .NET Framework 2.0 Setup
Welcome to Microsoft .NET Framework 2.0 Setup
This wizard will guide you through the installation process.
Next >
Cancel

Fig. 2-7 Setup wizard screen

(3) There is a prompt about the End-User License Agreement, check the [I accept the terms of the License Agreement] and click the [Install] button. Click the [Cancel] button to cancel the installation. The [< Back] and the [Print] buttons are not used here.

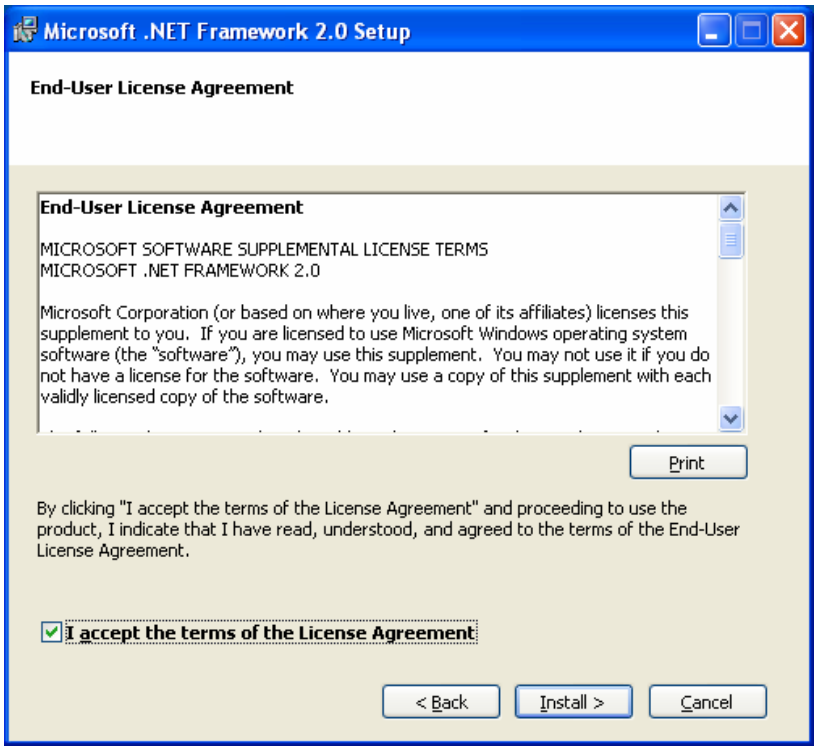

Microsoft .NET Framework 2.0 Setup
End-User License Agreement
End-User License Agreement
MICROSOFT SOFTWARE SUPPLEMENTAL LICENSE TERMS
MICROSOFT .NET FRAMEWORK 2.0
Microsoft Corporation (or based on where you live, one of its affiliates) licenses this supplement to you. If you are licensed to use Microsoft Windows operating system software (the "software"), you may use this supplement. You may not use it if you do not have a license for the software. You may use a copy of this supplement with each validly licensed copy of the software.
Print
By clicking "I accept the terms of the License Agreement" and proceeding to use the product, I indicate that I have read, understood, and agreed to the terms of the End-User License Agreement.
I accept the terms of the License Agreement
< Back
Install >
Cancel

Fig. 2-8 End-User License Agreement screen

(4) Screen is displayed to confirm installation. Click the [Cancel] button to cancel the installation.

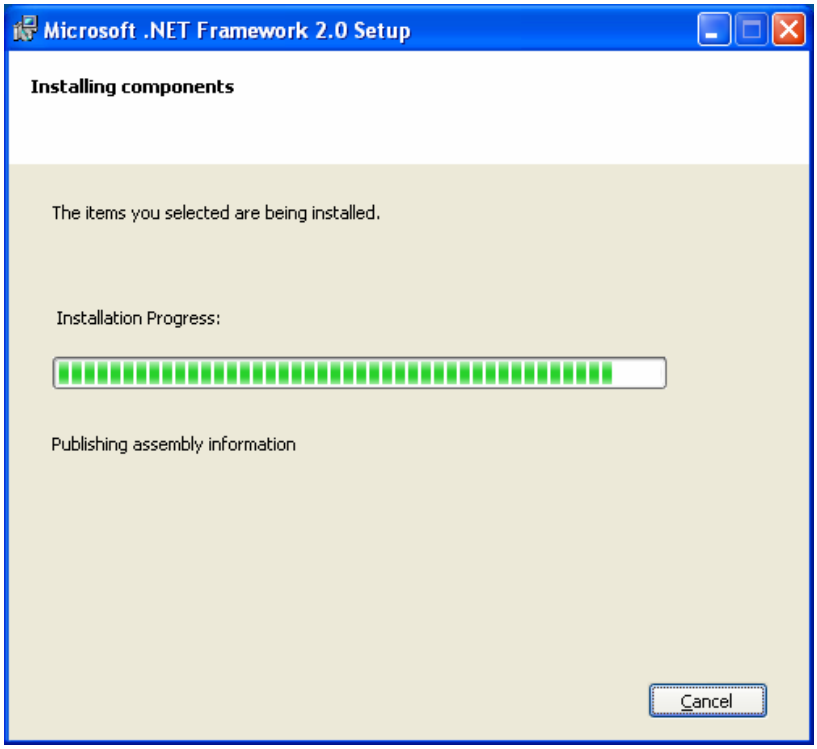


Fig. 2-9 Installation confirmation screen

(5) After installation, the Setup Complete screen appears. Click the [Finish] button, and the installation of Microsoft .NET Framework Version 2.0 is completed.

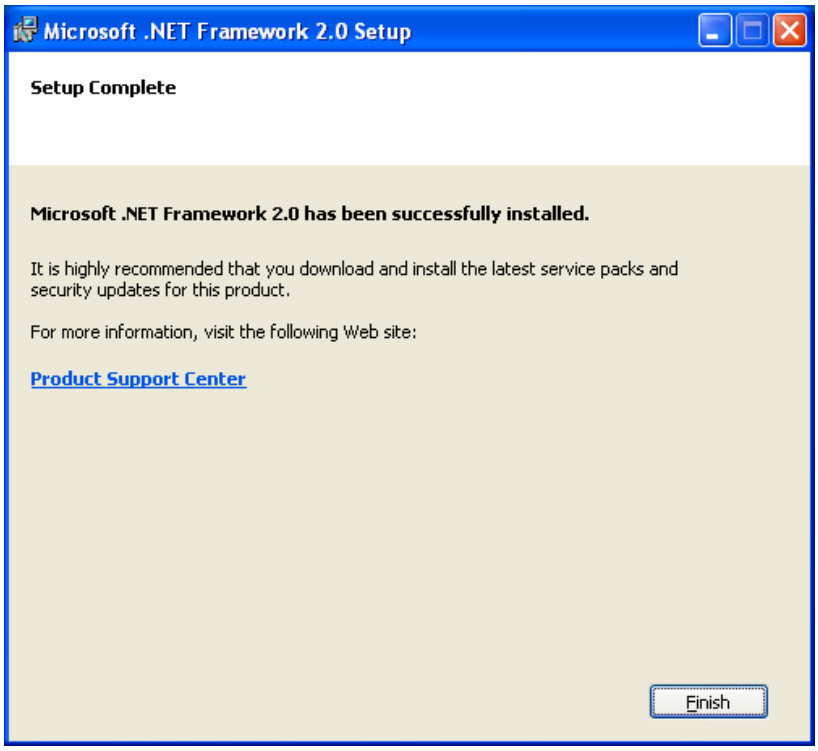

Microsoft .NET Framework 2.0 Setup
Setup Complete
Microsoft .NET Framework 2.0 has been successfully installed.
It is highly recommended that you download and install the latest service packs and security updates for this product.
For more information, visit the following Web site:
Product Support Center
Finish

Fig. 2-10 Setup Complete

2.3. Installing of USBExpress

(1) Insert the setup disk into the drive, and double-click “USBXpressInstaller.exe” in the USBExpress folder.

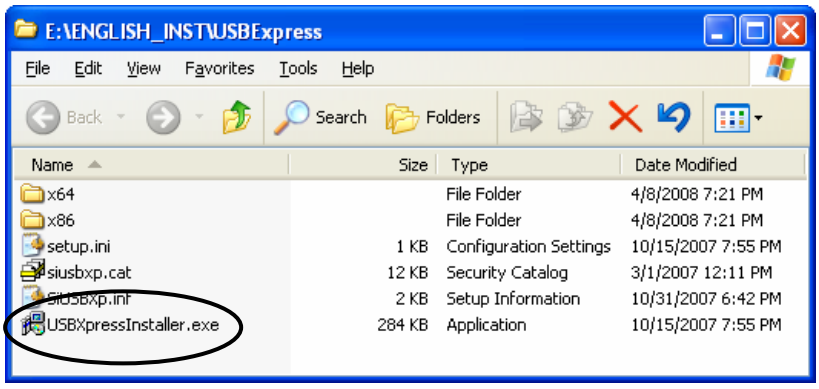

E:\ENGLISH_INST\USBExpress
File Edit View Favorites Tools Help
Back Search Folders
Name Size Type Date Modified
x64 File Folder 4/8/2008 7:21 PM
x86 File Folder 4/8/2008 7:21 PM
setup.ini 1 KB Configuration Settings 10/15/2007 7:55 PM
siusbxp.cat 12 KB Security Catalog 3/1/2007 12:11 PM
SiUSBXp.inf 2 KB Setup Information 10/31/2007 6:42 PM
USBXpressInstaller.exe 284 KB Application 10/15/2007 7:55 PM

Fig. 2-11 File Installation

(2) Installer will start up. Click the [Install] button. Click the [Cancel] button to cancel the installation. The [Change Install Location] button is not used.

Fig. 2-12 Installer screen

(3) If the warning on the windows logo test is indicated, click the [Continue Anyway] button to continue the operation.

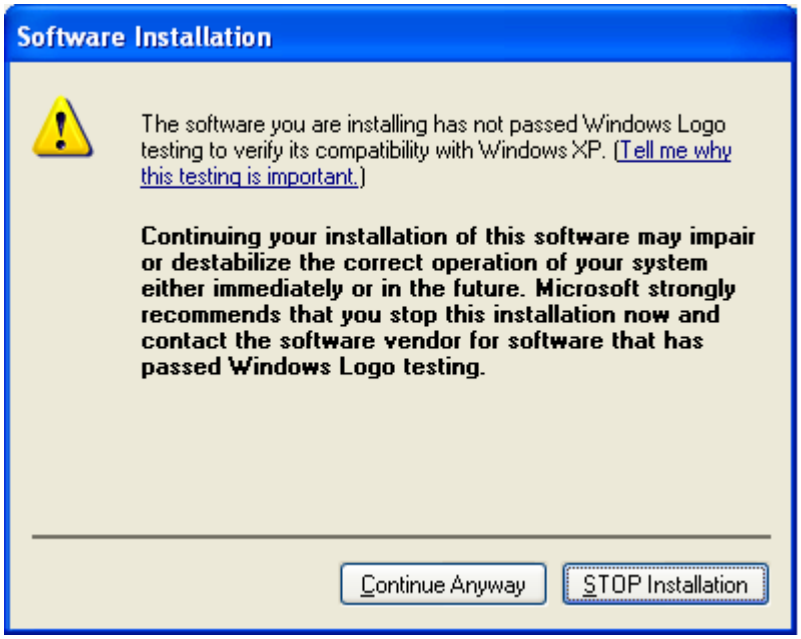

Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Fig. 2-13 Software Installation screen

(4) After installation, the installation complete screen appears. Click the [OK] button, and the installation of USBExpress is completed.

Fig. 2-14 Installation complete screen

2.4. Device Recognition

(1) After the setup in “Section 2.1, 2.2 and 2.3” are normally completed, connect the PUX2 to the PC via supplied USB cable. Found New Hardware Wizard will start up. Check the [Install from a list or specific location (Advanced) (S)] button and click the [Next] button. Click the [Cancel] button to cancel the installation.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USBXpress Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Fig. 2-15 Found New Hardware Wizard

(2) The Found New Hardware Wizard appears. Check the [Don’t search. I will choose the driver to install (D)] and click the [Next] button. Click the [Cancel] button to cancel the installation. The [Back (B)] button is not used here.

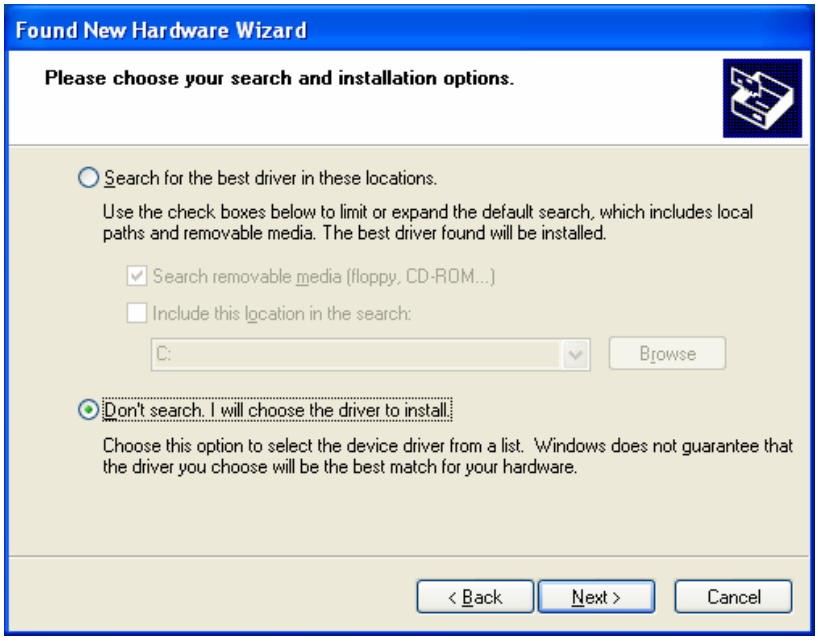

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

Fig. 2-16 Found New Hardware Wizard 2

(3) The Found New Hardware Wizard appears. Select the device driver to be installed for this hardware. Select the [USBExpress Driver] indicated in the [Model], and click the [Next] button. Click the [Cancel] button to cancel the installation. The [Back] button is not used here.

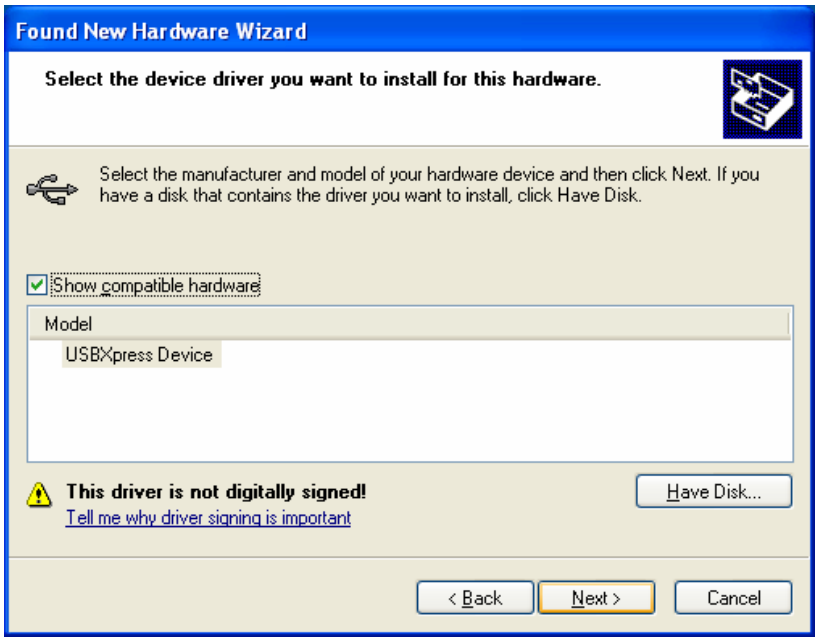
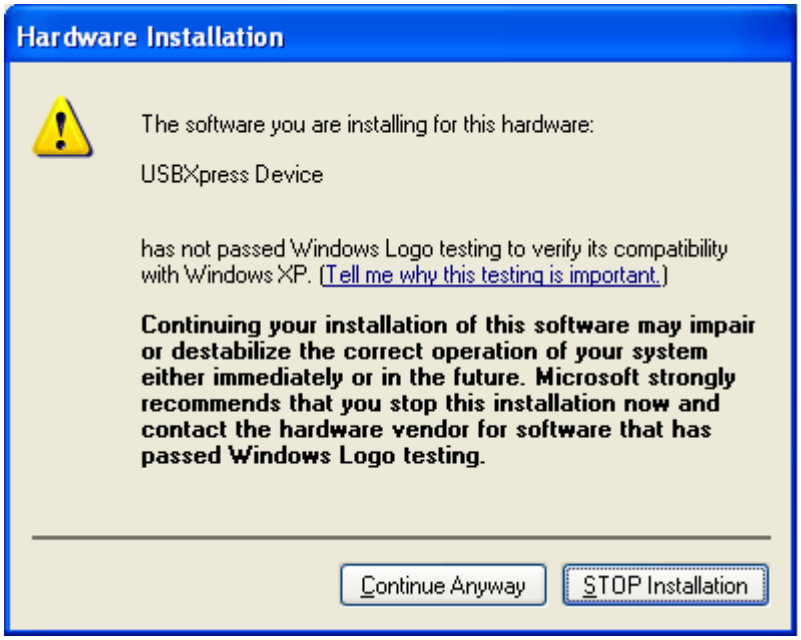

Found New Hardware Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
USBXpress Device
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

Fig. 2-17 Found New Hardware Wizard 3

(4) If the warning on the Windows Logo test is indicated, click the [Continue Anyway] button to continue the operation. Screen is displayed to confirm installation. Wait until installation is completed.


Hardware Installation
The software you are installing for this hardware:
USBXpress Device
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

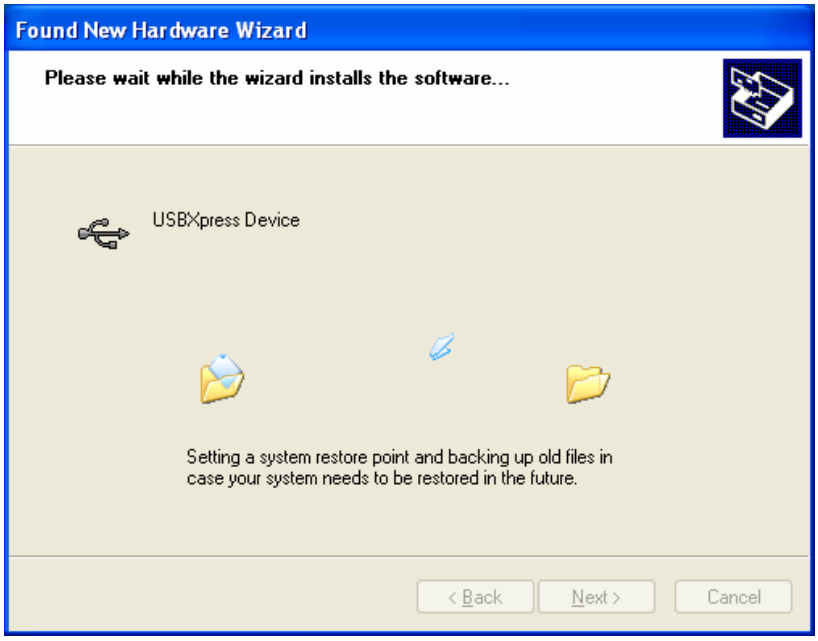

Found New Hardware Wizard
Please wait while the wizard installs the software...
USBXpress Device
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel

Fig. 2-18 Installation confirmation screen

(5) After installation, the installation complete screen appears. Click the [OK] button, and the device recognition is completed.

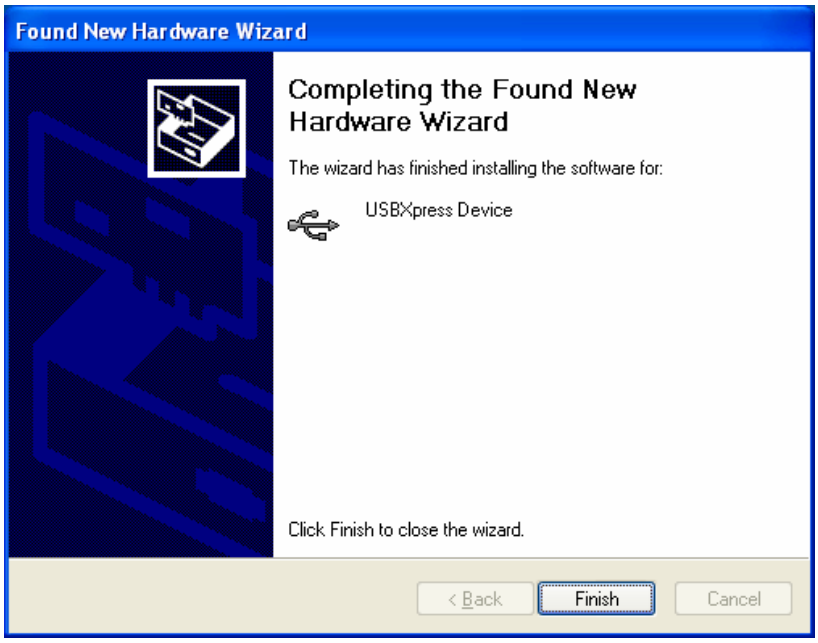


Fig. 2-19 Installation complete screen

2.5. Installing of Loader Software

(1) Insert the setup disk into the drive, and double-click “PFC_SETUP_ENG.msi”.

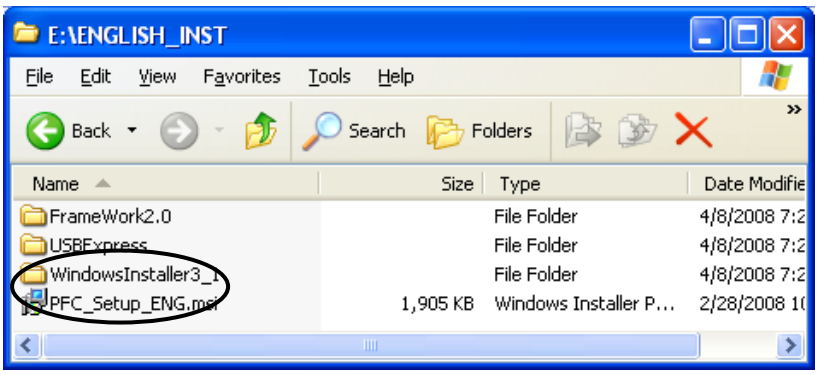

E:\ENGLISH_INST
File Edit View Favorites Tools Help
Back Search Folders
Name Size Type Date Modifie
FrameWork2.0 File Folder 4/8/2008 7:2
USBExpress File Folder 4/8/2008 7:2
WindowsInstaller3_1 File Folder 4/8/2008 7:2
PFC_Setup_ENG.msi 1,905 KB Windows Installer P... 2/28/2008 1(

Fig. 2-20 File Installation

(2) Setting wizard will start up. Click the [Next] button. Click the [Cancel] button to cancel the installation.

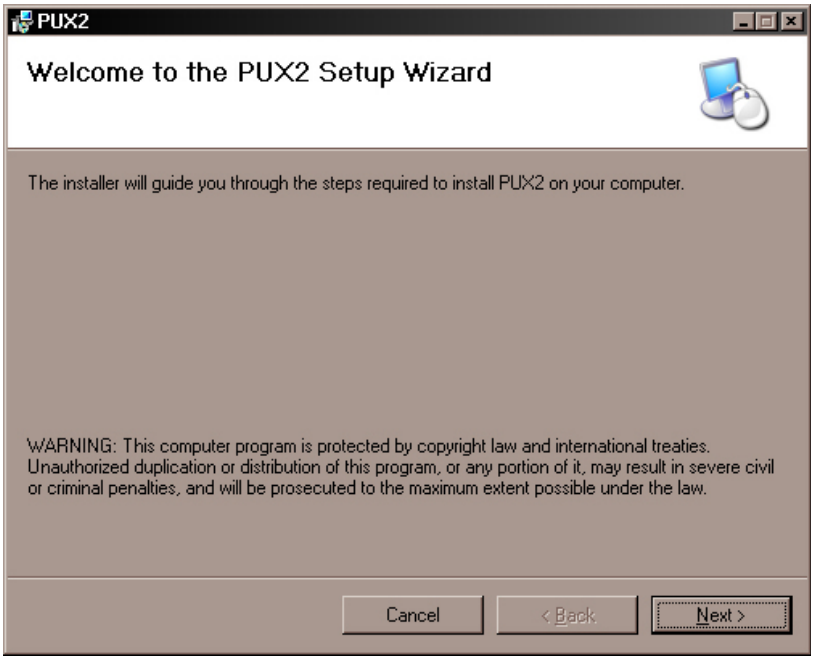

PUX2
Welcome to the PUX2 Setup Wizard
The installer will guide you through the steps required to install PUX2 on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

Fig. 2-21 Setup wizard screen

(3) There is a prompt about selection of installation folder. Click the [Next] button to install the software in that folder. Click the [Cancel] button to cancel the installation. The [Back (B)], the [Print (P)] and the [Disk range (D)] buttons are not used here.

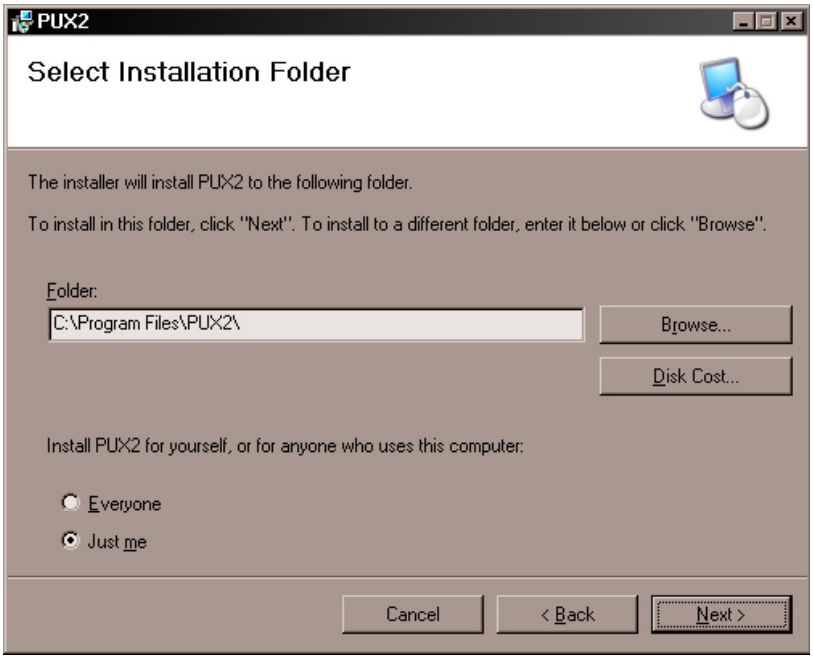

PUX2
Select Installation Folder
The installer will install PUX2 to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\PUX2\
Browse...
Disk Cost...
Install PUX2 for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

Fig. 2-22 Select installation folder screen

(4) Screen is displayed to confirm installation. Click the [Next] button to execute the installation. Click the [Cancel] button to cancel the installation. The [Back (B)] button is not used here.

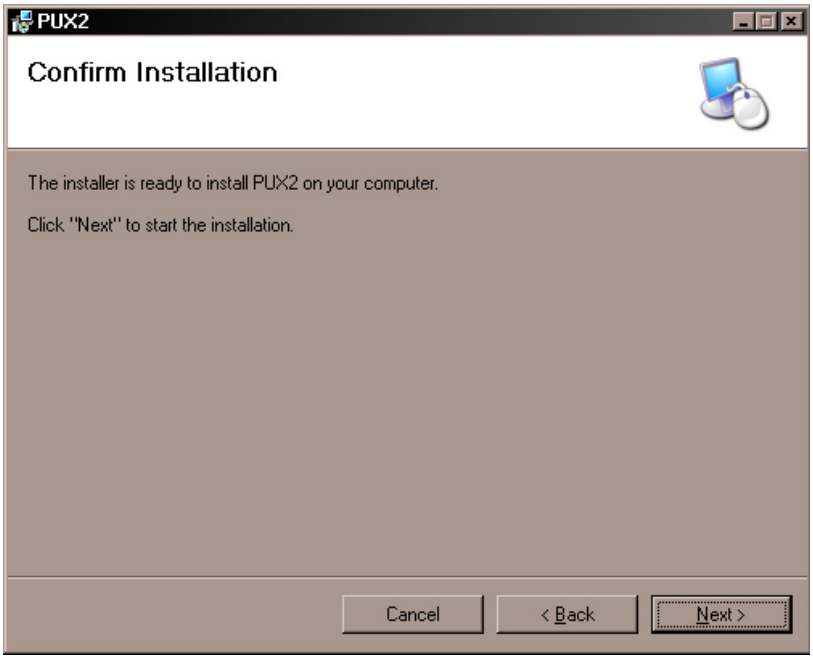

PUX2
Confirm Installation
The installer is ready to install PUX2 on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

Fig. 2-23 Installation confirmation screen

(5) Execute installation. Click the [Cancel] button to cancel the installation.

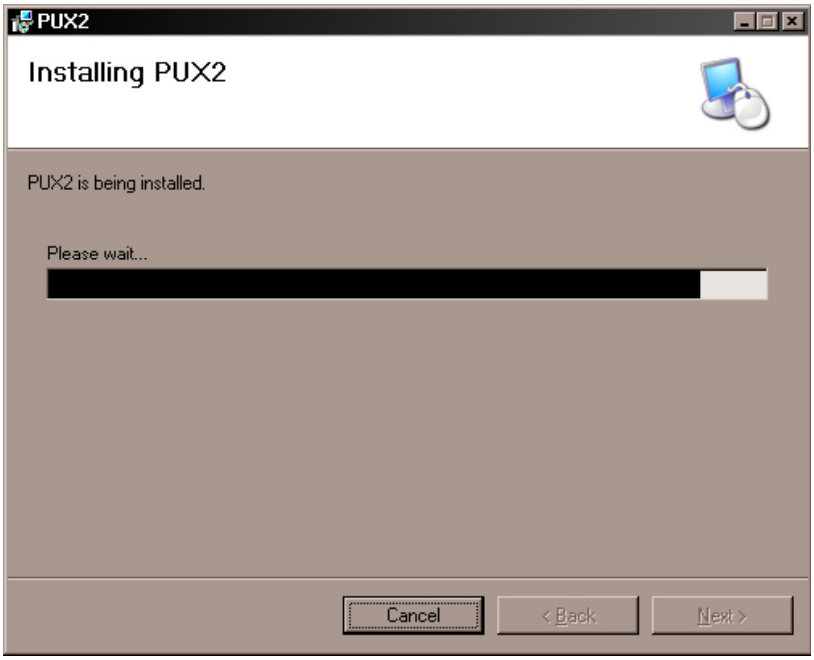


Fig. 2-24 Installing screen

(6) The Installation Complete screen is displayed. Click the [Close] button to exit the installation screen.

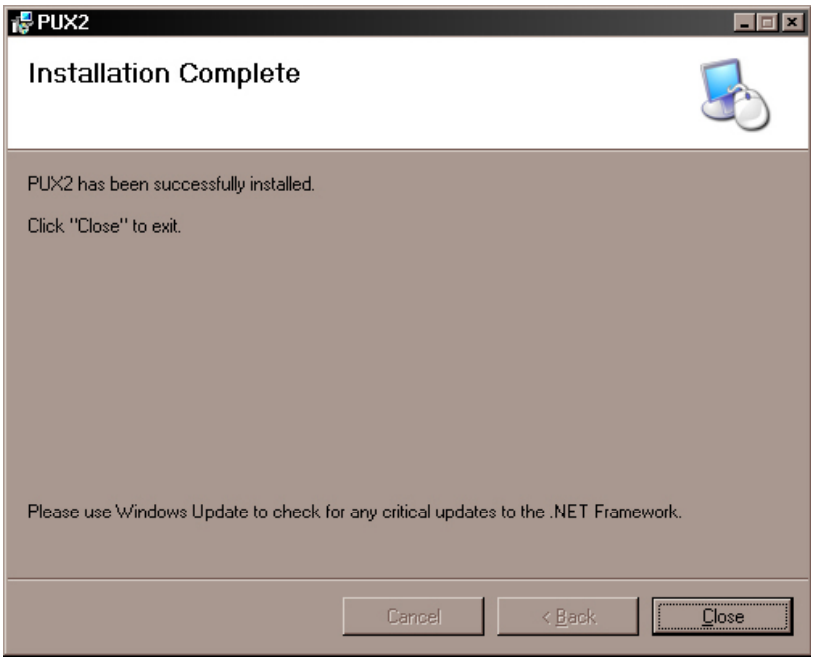


Fig. 2-25 Installation complete screen

(7) After installation, the start menu and the application (“PUX2”) that has been installed in the desktop are created.

3. Communication Specification

See the following table for communication specifications.

(1) Genearal specification

Table 3-1 Communication specifications

Item	Specifications
Standard (Electrical specification)	USB communication
Transmission system	Half-duplex
Synchronizing method	Start-stop synchronous transmission
Transmission rate	500kBPS
Parity	Odd-parity
Start/Stop bit	1 bit
Data length	8 bits
Station	0 fixed
Number of units connected	Max. 1
Transmission code	HEX value (MODBUS RTU mode)
Error detection	CRC-16
Echo back	None
Flow control	Xon/off

(2) Interface specification
Electrical specification: Confirms to USB standard.
Cable length: 3m or less
Conforming cable: Mini USB cable
Connection scheme: 1:1 connection.

4. Startup Method

Select “PUX2” from the Start menu and the following Menu screen appears.

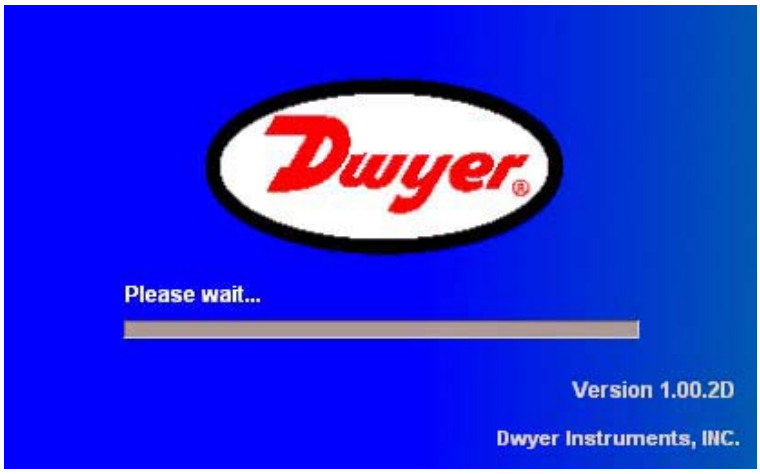


Fig. 4-1 Startup screen

- The Menu Window (Fig. 4-2).
  At this time, program reads the ini file, perform communication with the flowmeter, and the unit information is acquired.
- If error occurs during communications, a pop-up message "Check the connection" is displayed. In this case, check the connection using the wired device.

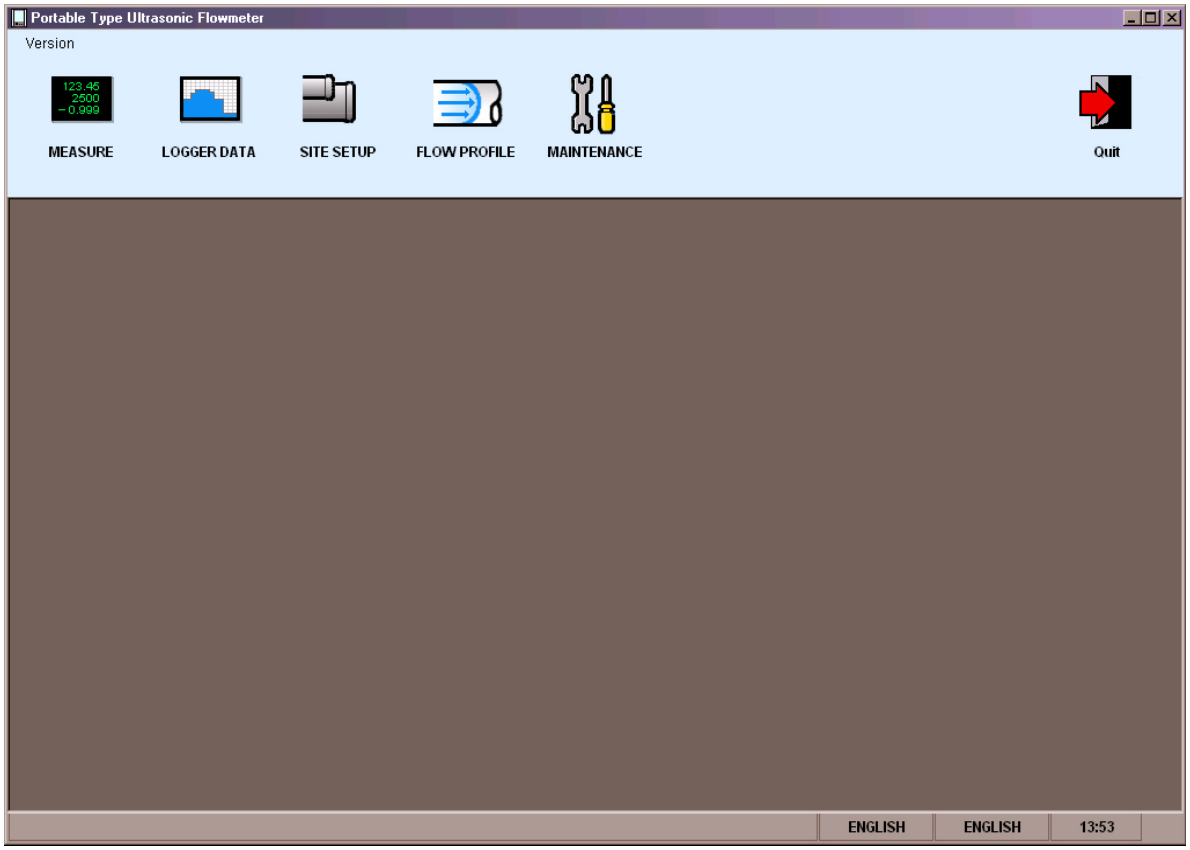


Fig. 4-2 Menu screen

- Click the Main menu and each function button to execute a desired function

4.1. Version

On the Menu screen, click “Version” of the main menu item, and the following screen appears.

Fig. 4-3 Version screen

- Click the [X] button on the upper right to close the screen.

5. Setting Screen

Set the check box of each setting item to ON “☑” so that the item can be input or selected. When it is set to OFF “☐” , the item cannot be input or selected. Click the [Set up] and send the setting value of the item (check box set to ON “☑”) one by one, and reflect the response value to the setting value. Click the [load] and read the setting value of the item (check box set to ON “☑”), and reflect the response value to the setting value. Click the [Save] and write the current setting value into Flash ROM. If you change your setting, this operation above must be required.

When the unit in the system setting is changed, it reflects the corresponding item. Be sure to reflect the setting value or the range unit after reading is completed. (The flowmeter returns values in a unit specified.) The values are displayed in a set unit. (Read or change the unit when the flowmeter is started. You cannot change the unit by key operation at the loader.)

In the case of the unit whose input range is limited, the input value is not checked by the loader and sent as it is. The range is checked on the flowmeter side. If the range is exceeded, the flowmeter does not update the request and respond the current value.

⚠ CAUTION

- When changing Flow meter settings, make sure the flowmeter display is on the measurement screen.
  Setting change attempts except from the measurement screen may result in communication error.

6. Measurement

Click the “MEASURE” button on the Menu screen, and the following screen appears.

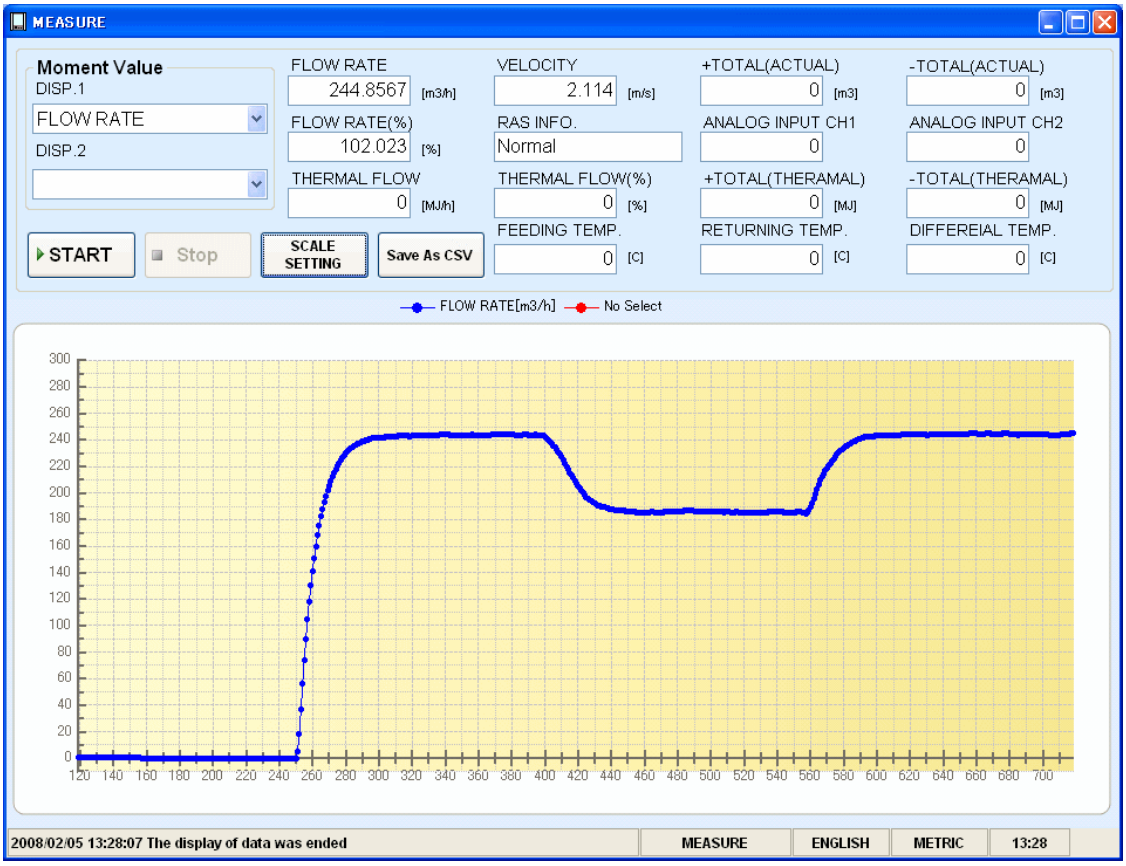


Fig. 6-1 MEASURE screen

- First, select instantaneous trend value from [FLOW RATE], [FLOW RATE%], [VELOCITY], [THERMAL FLOW], [THERMAL FLOW%], [ANALOG INPUT1], [ANALOG INPUT2], [FEEDING TEMP], [RETURNING TEMP] and [DIFFERENTIAL TEMP].
- Up to 2 instantaneous values can be selected.

- Click the [SCALE SETTING] button to set [Max.] and [Min.] of Y scale and [Cycle] and [Point] of X scale. Press the [Setting] button to reflect the setting.Press the [Cancel] button to cancel the setting. When setting is not made, the initial value is reflected.

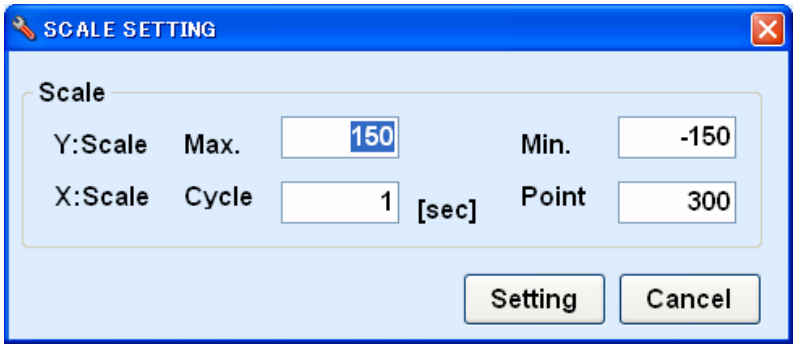
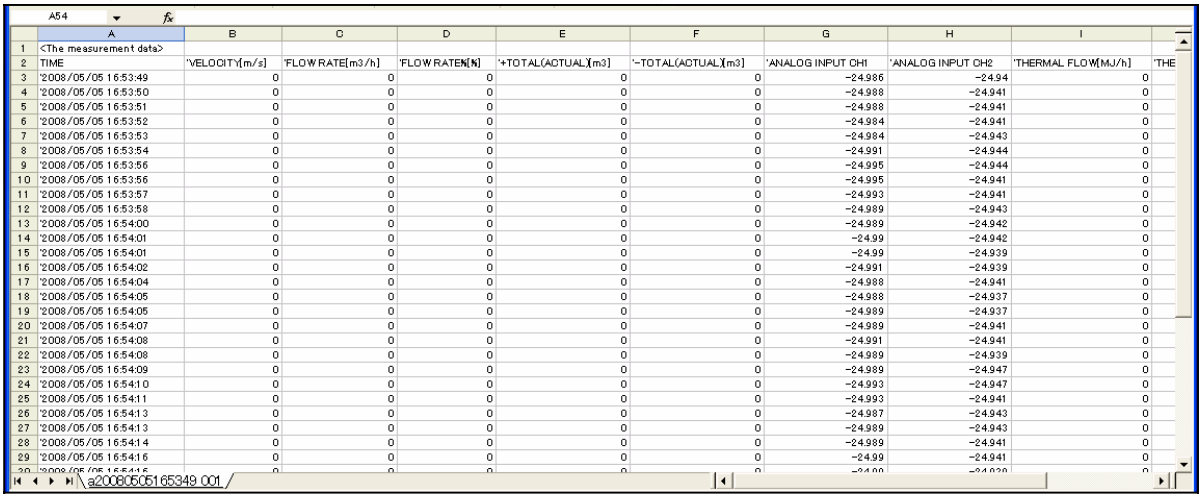


Fig. 6-2 Scale setting screen

- Click the [Save as CSV] button and you are prompted to enter the name of a file to which the data is to be saved. Specify the destination to save and enter the file name, and a CSV file is created. When the save file is set, the [START] button can be pressed.If number of data exceeds 65531, create a separate file to save the data.Note that the number of files to be created (serial number) is up to 500.

Example) Setting file name _ YYYYMMDDHHMMSS _ XXX (3-digit serial number. 1 START)



	A	B	C	D	E	F	G	H	I
1	<The measurement data>								
2	TIME	'VELOCITY[m/s]	'FLOW RATE[m3/h]	'FLOW RATE%[%]	'+TOTAL(ACTUAL)[m3]	'-TOTAL(ACTUAL)[m3]	'ANALOG INPUT CH1	'ANALOG INPUT CH2	'THERMAL FLOW[MJ/h]
3	'2008/05/05 16:53:49	0	0	0	0	0	-24.986	-24.94	0
4	'2008/05/05 16:53:50	0	0	0	0	0	-24.988	-24.941	0
5	'2008/05/05 16:53:51	0	0	0	0	0	-24.988	-24.941	0
6	'2008/05/05 16:53:52	0	0	0	0	0	-24.984	-24.941	0
7	'2008/05/05 16:53:53	0	0	0	0	0	-24.984	-24.943	0
8	'2008/05/05 16:53:54	0	0	0	0	0	-24.991	-24.944	0
9	'2008/05/05 16:53:55	0	0	0	0	0	-24.995	-24.944	0
10	'2008/05/05 16:53:56	0	0	0	0	0	-24.995	-24.941	0
11	'2008/05/05 16:53:57	0	0	0	0	0	-24.993	-24.941	0
12	'2008/05/05 16:53:58	0	0	0	0	0	-24.989	-24.943	0
13	'2008/05/05 16:54:00	0	0	0	0	0	-24.989	-24.942	0
14	'2008/05/05 16:54:01	0	0	0	0	0	-24.99	-24.942	0
15	'2008/05/05 16:54:01	0	0	0	0	0	-24.99	-24.939	0
16	'2008/05/05 16:54:02	0	0	0	0	0	-24.991	-24.939	0
17	'2008/05/05 16:54:04	0	0	0	0	0	-24.988	-24.941	0
18	'2008/05/05 16:54:05	0	0	0	0	0	-24.988	-24.937	0
19	'2008/05/05 16:54:05	0	0	0	0	0	-24.989	-24.937	0
20	'2008/05/05 16:54:07	0	0	0	0	0	-24.989	-24.941	0
21	'2008/05/05 16:54:08	0	0	0	0	0	-24.991	-24.941	0
22	'2008/05/05 16:54:08	0	0	0	0	0	-24.989	-24.939	0
23	'2008/05/05 16:54:09	0	0	0	0	0	-24.989	-24.947	0
24	'2008/05/05 16:54:10	0	0	0	0	0	-24.993	-24.947	0
25	'2008/05/05 16:54:11	0	0	0	0	0	-24.993	-24.941	0
26	'2008/05/05 16:54:13	0	0	0	0	0	-24.987	-24.943	0
27	'2008/05/05 16:54:13	0	0	0	0	0	-24.989	-24.943	0
28	'2008/05/05 16:54:14	0	0	0	0	0	-24.989	-24.941	0
29	'2008/05/05 16:54:16	0	0	0	0	0	-24.99	-24.941	0

a20080505165349 001

- Click the [START] button, and the trend is displayed (X-axis is a collection time. When the specified number of items is stored, the oldest data is deleted and the time display is changed so that the latest value is displayed.), the data is read in the specified cycle, and the following are updated: [FLOW RATE], [FLOW RATE%], [VELOCITY], [THERMAL FLOW], [THERMAL FLOW%], [ANALOG INPUT1], [ANALOG INPUT2], [FEEDING TEMP], [RETURNING TEMP], [DIFFERENTIAL TEMP], [+TOTAL(ACTUAL)], [–TOTAL(ACTUAL)], [+TOTAL(THERMAL)], [–TOTAL(THERMAL)], [RAS INFO.].The line of graph in the display 1 is blue and that in the display 2 is red. For stop collecting, click [Stop].

7. Logger data

Click the ”Logger data” button on the Menu screen, and the following screen appears.

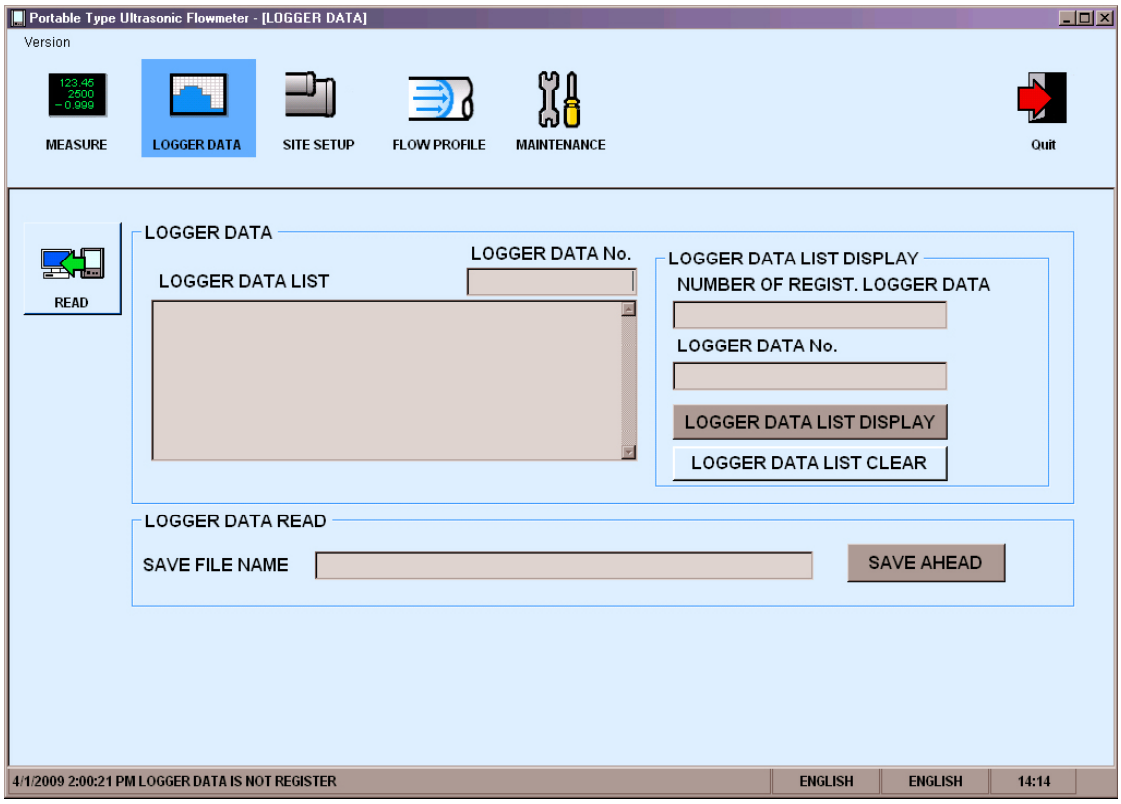


Fig. 7-1 LOGGER DATA screen

Table 7－1 LOGGER DATA screen specifications

Item	Contents
Logger data list	Name list of the logger data numbers from 0 to 100. You cannot select multiple data. To select a logger data in the list to be read, check the check box of the logger data.
Logger data number	Displays the logger data number selected in the list.
Number of logger data registered	Displays total number of logger data files registered.
Logger data number Setting	To display a [LOGGER DATA LIST] of an arbitrary first and subsequent data, manually input the first logger data number.
Logger data list display	Redisplays the logger data list from the [LOGGER DATA No] (setting).
Storage	Specify the storage area for logger data during read operation. If specified, press the [READ] button to save the file.
Name of save files	Full pathname including a name of a destination file to save data that is specified in the “Select a destination to save the data” is displayed. You cannot directly edit this item. The extension of save files is in CSV format.

CAUTION

- The time of reading logger data to PC will take about 25 min. in case of 1.6MB.
  The reading will take time for a while; regularly reading SD memory card directly via a PC is recommended.

8. Site Setting

Click the “SITE SETUP” button on the Menu screen, and the following screen appears.

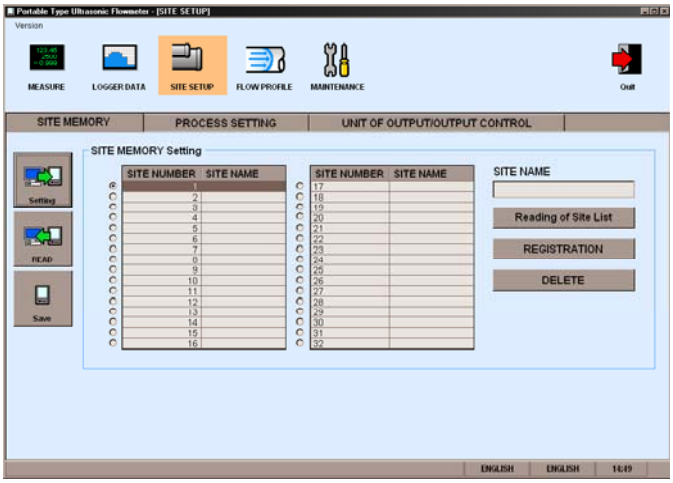


Fig. 8-1 SITE MEMORYscreen

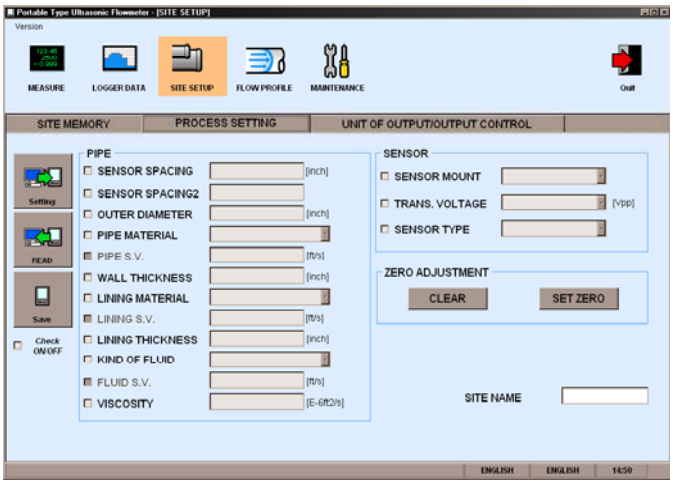


Fig. 8-2 PROCESS SETTING screen

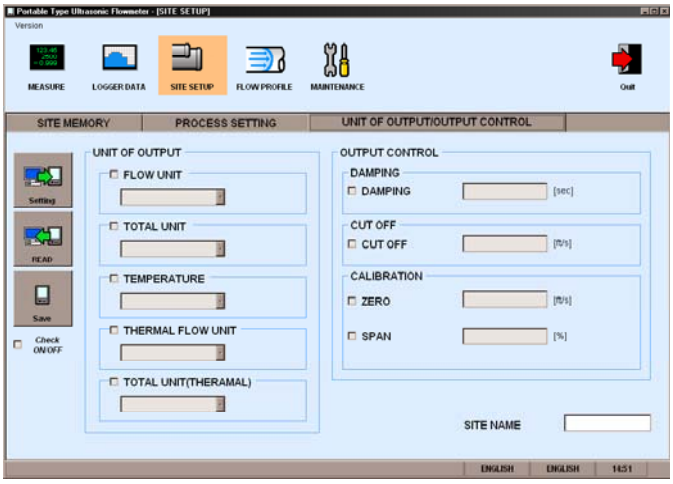


Fig. 8-3 UNIT OF OUTPUT/OUTPUT CONTROL

8.1. Site Memory

Select Tab Page 1 on the SITE SETUP screen and the following screen appears.

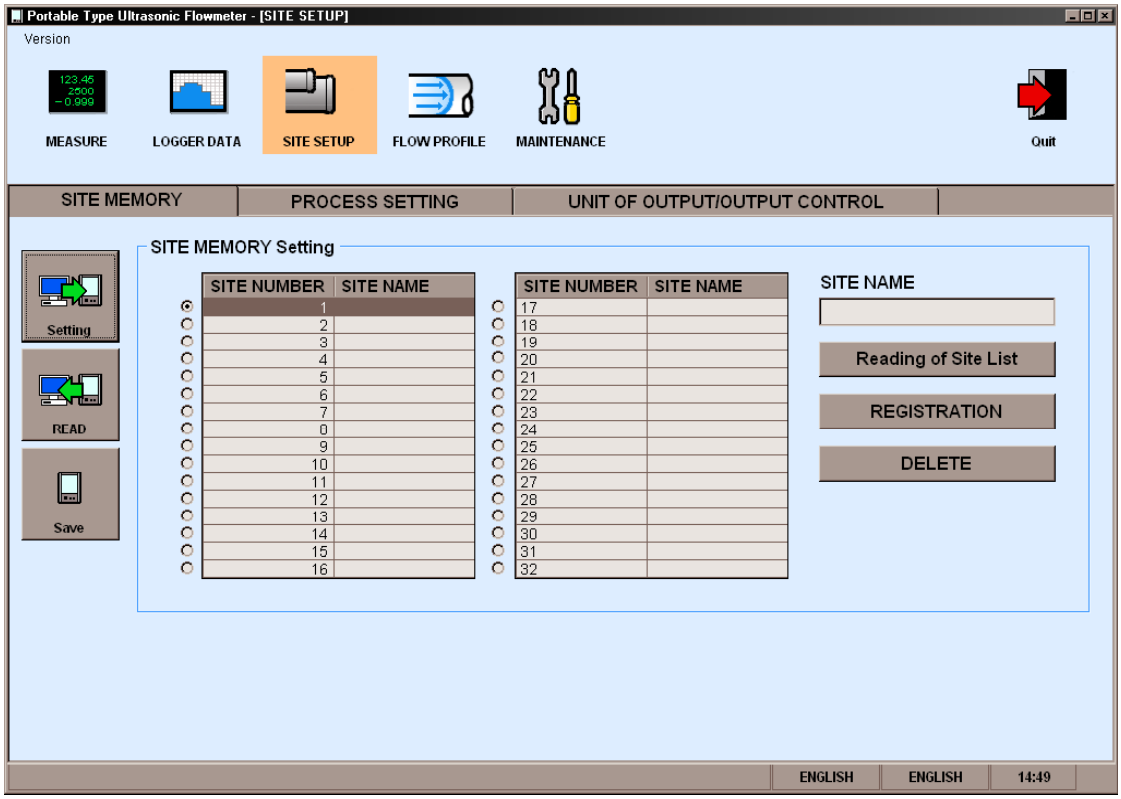


Fig. 8-4 SITE MEMORY screen

Table 8－1

Item	Contents
Site memory setting	Name list for site memory number 1 to 32.The number of lists to be displayed is fixed to 32 and multiple selections are not allowed. Check the site number 1 in case of initial display.
Site name	Displays the name of site memory selected in the list.
Reading of Site list	Pressed when the site memory list is being acquired. Acquire the name list for site memory number 1 to 32 to be displayed in the site memory setting.
REGISTRATION	Registers the site memory as a new entry. On the site memory setting list, select the site number that has not been registered in the site memory, and press it after entering the site name.
DELETE	Deletes the site memory. On the site memory setting list, select the site number registered in the site memory, and press it.

- Press the [Setting] button, and set all the tab pages of the site setting only on this screen. The setting is performed only for checked setting items in the [PROCESS SETTING] and [UNIT OF OUTPUT/OUTPUT CONTROL] pages.
- Press the [READ] button, and set all the tab pages of the site setting only on this screen. The setting is performed only for checked setting items in the [PROCESS SETTING] and [UNITOF OUTPUT/OUTPUT CONTROL] pages.

8.2. Establish Setting

Select Tab Page 2 on the SITE SETUP screen and the following screen appears.

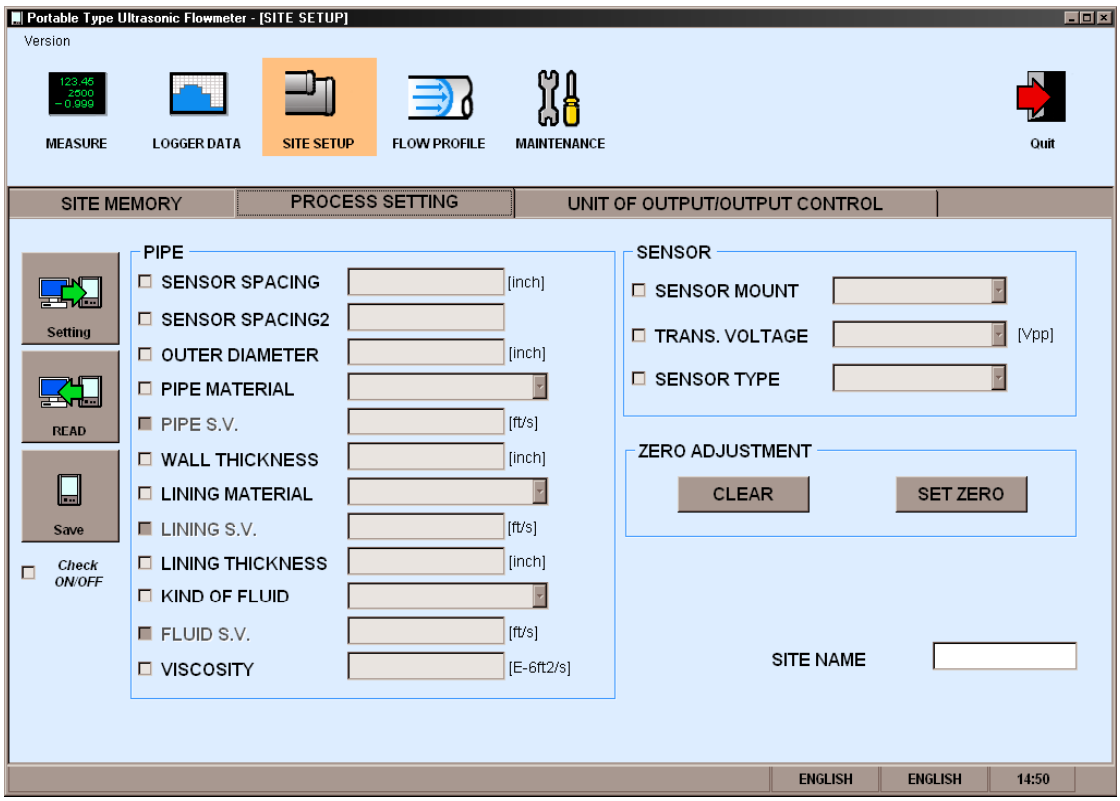


Fig. 8-5 PROCESS SETTING screen

Table 8－2 Piping specifications

Item	Contents
OUTER DIAMETER	Enter in the range of 13.00 to 6000.00mm [0.5118 to 236.22inch].
PIPE MATERIAL	Select from carbon steel, stainless steel, PVC, Copper, Cast iron, aluminum, FRP, ductile iron, PEEK, PVDF, acrylic, PP and others.
PIPE S.V.	Enter in the range of 1000 to 3700m/s [3280 to 12140ft/s].(Unit dependent)
WALL THICKNESS	Enter in the range of 0.10 to 100.00mm [0.0039 to 3.9370inch].(Unit dependent)
LINING MATERIAL	Select from no lining, tar epoxy, mortar, rubber, TFE, pyrex, glass, PVC and others.
LINING S.V.	Enter in the range of 1000 to 3700m/s [3280 to 12140ft/s].(Unit dependent)
LINING THICKNESS	Enter in the range of 0.01 to 100.00mm [0.0003 to 3.9370inch].(Unit dependent)
KIND OF FLUID	Select from water, seawater, dist. water, ammonia, alcohol, benzene, bromide, ethanol, glycol, kerosene, milk, methanol, toluol, lube oil, fuel oil, petrol and others.
FLUID S.V.	Enter in the range of 300 to 2500m/s [984 to 8203ft/s].(Unit dependent)
VISCOSITY	Enter in the range of 0.0010 to 999.999×10^{-6} m^2/s [0.0107 to 10763.9094×10^{-6} ft^2/s].(Unit dependent)
SENSOR SPACING	Displayed during [READ] only.
SENSOR SPACING	Displayed during [READ] operation.

- If “Other” is selected as pipe material, pipe sound velocity becomes valid.
- If “Other” is selected as lining material, lining sound velocity becomes valid.
- If other than “No lining” is selected as lining material, lining thickness becomes valid.
- If “Other” is selected as fluid type, fluid sound velocity becomes valid.

Table 8－3 Sensor specifications

Item	Contents
SENSOR MOUNT	Select from Z method and V method.
TRANS. VOLTAGE	Select from 20, 40, 80 and 160.
SENSOR TYPE	Select from PSX2A, PSX2B/SX2A, PSX2HT, PSX2C, PSX2D, PSX2E, SX1A, SX2B, SX1B, SX1C, SX3A, SX3B.

Table 8－4 Zero point calibration specifications

Item	Contents
ZERO ADJUSTMENT	Perform zero point calibration using the Clear and the Adjust button. ZERO ADJUSMENT is different from the method below of other parameters. Click the [Setting] button and display the confirmation message screen.

- The site name which corresponding to reading/writing of information is displayed in “SITE NAME”.

8.3. Output unit/Output control

Select Tab Page 3 on SITE SETUP screen and the following screen appears.

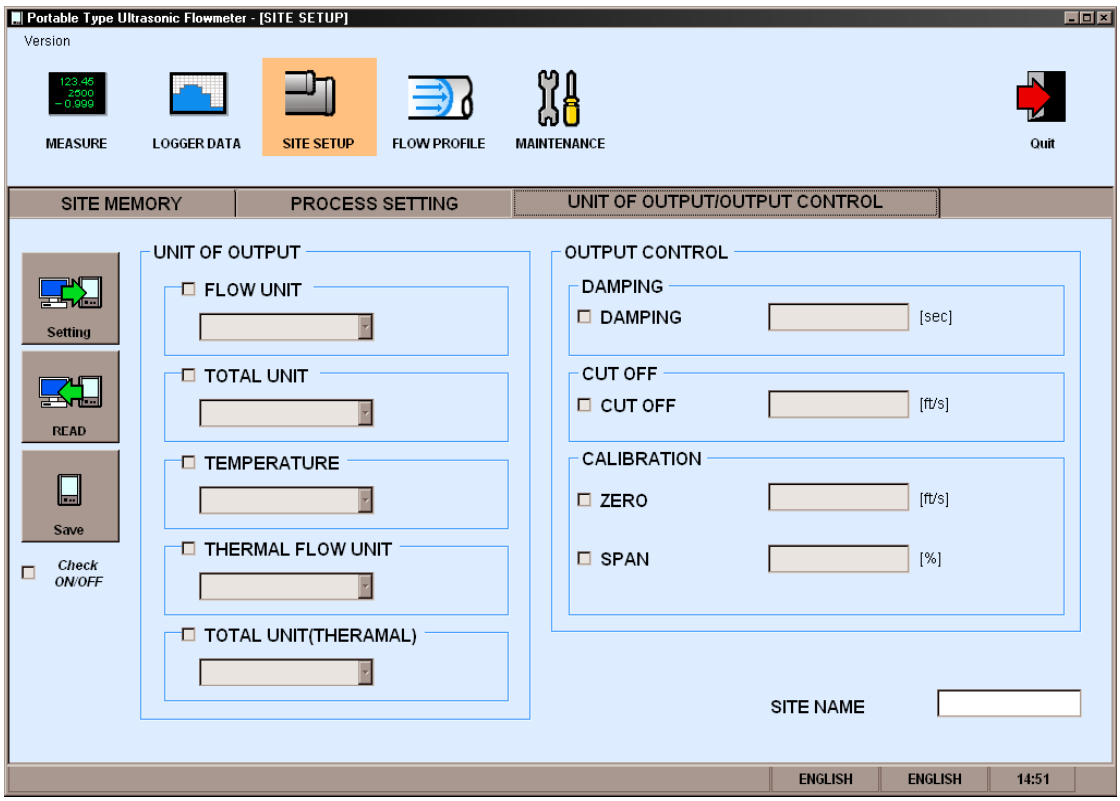


Fig. 8-6 UNIT OF OUTPUT/OUTPUT CONTROL

Table 8－5 Output unit specifications

Item	Contents
System Unit	Metric or inch
FLOW UNIT	Select from L/s, L/min, L/h, L/d, kL/d, ML/d, m3/s, m3/min, m3/h, m3/d, km3/d, Mm3/d, BBL/s, BBL/min, BBL/h, BBL/d, kBBL/d, MBBL/d [gal/s, gal/min, gal/h, gal/d, kgal/d, Mgal/d, ft3/s, ft3/min, ft3/h, ft3/d, kft3/d, Mft3/d, BBL/s, BBL/min, BBL/h, BBL/d, kBBL/d and MBBL/d]
THERMAL FLOW UNIT	Select from mL, L, m3, km3, Mm3, mBBL, BBL, kBBL [gal, kgal, ft3, kft3, Mft3, mBBL, BBL, kBBL, ACRf]
TEMPERATURE	Select either °C or K. [F or K]
THERMAL FLOW UNIT	Select either MJ/h or GJ/h, BTU/h, KBTU/h, MBTU/h.
TOTAL UNIT(THERMAL)	Select either MJ or GJ, BTU, KBTU, MBTU.

Table 8－6 Output control specifications

Item	Contents
DAMPING	Enter in the range of 0.0 to 100.0sec.
CUT OFF	Enter in the range of 0,000 to 5,000m/s [0.000 to 16.405ft/s] .
CALIBRATION ZERO	Enter in the range of -5,000 to 5,000m/s [-16.405 to 16.405ft/s].
CALIBRATION SPAN	Enter in the range of 10 to 200.00%.

- The site name which corresponding to reading/writing of information is displayed in “SITE NAME”.

9. Maintenance

Click the “MAINTENANCE” button on the Menu screen, and the following screen appears.

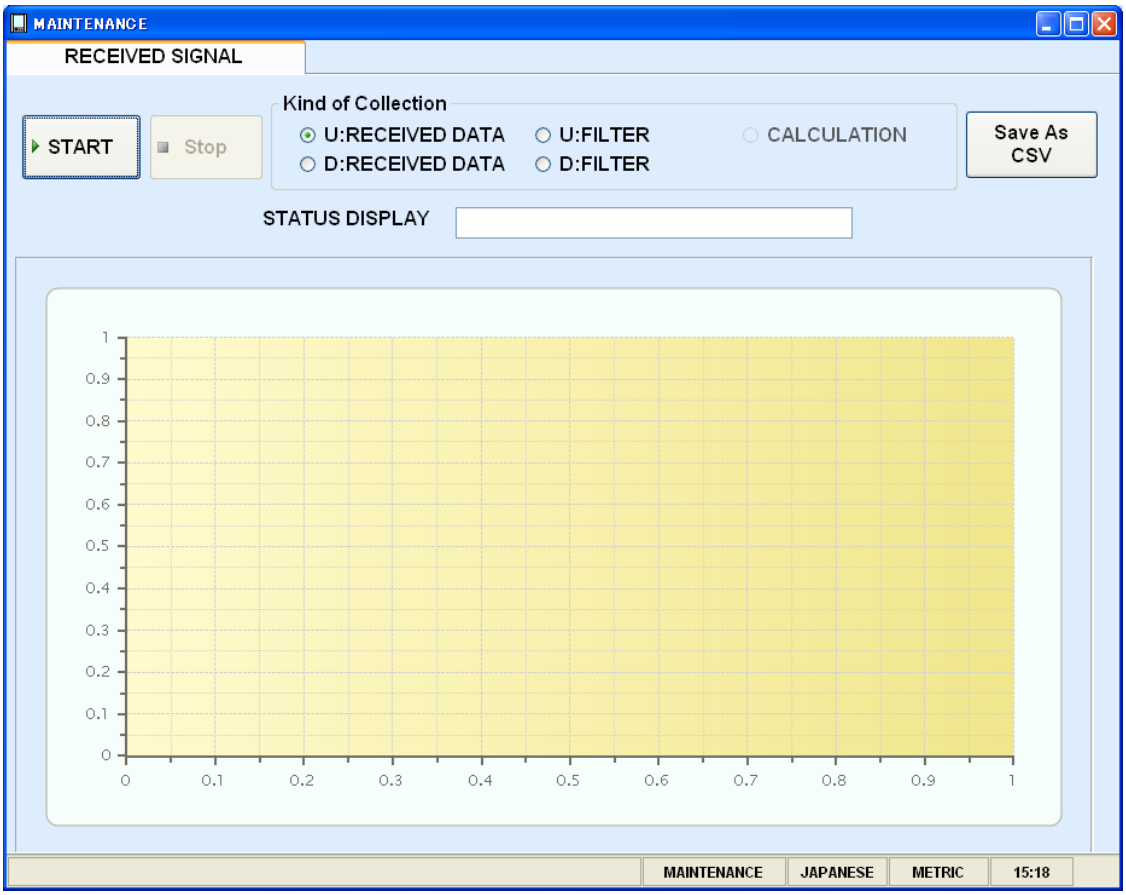


Fig. 9-1 RECEIVED SIGNAL screen

9.1. RECEIVED SIGNAL

Select Tab Page 2 on the MAINTE screen and the following screen appears.

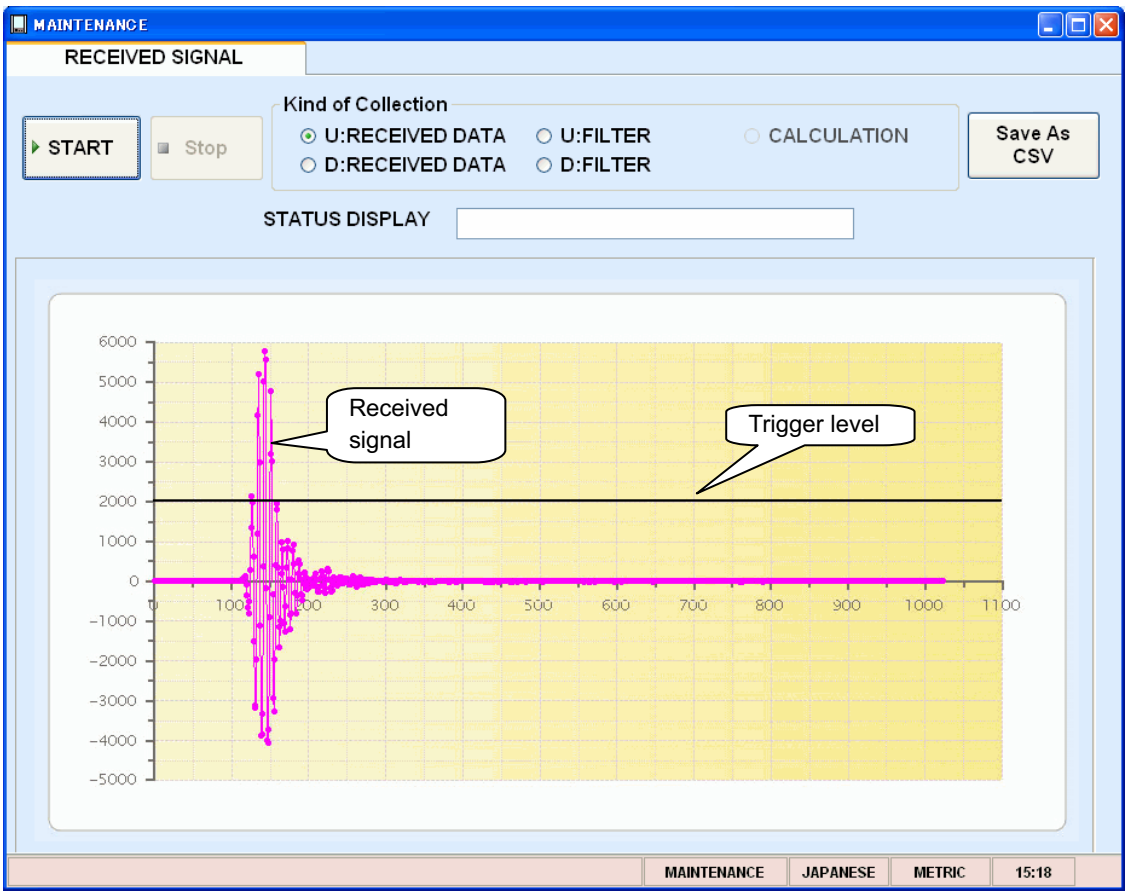


Fig. 9-2 RECEIVED SIGNAL screen

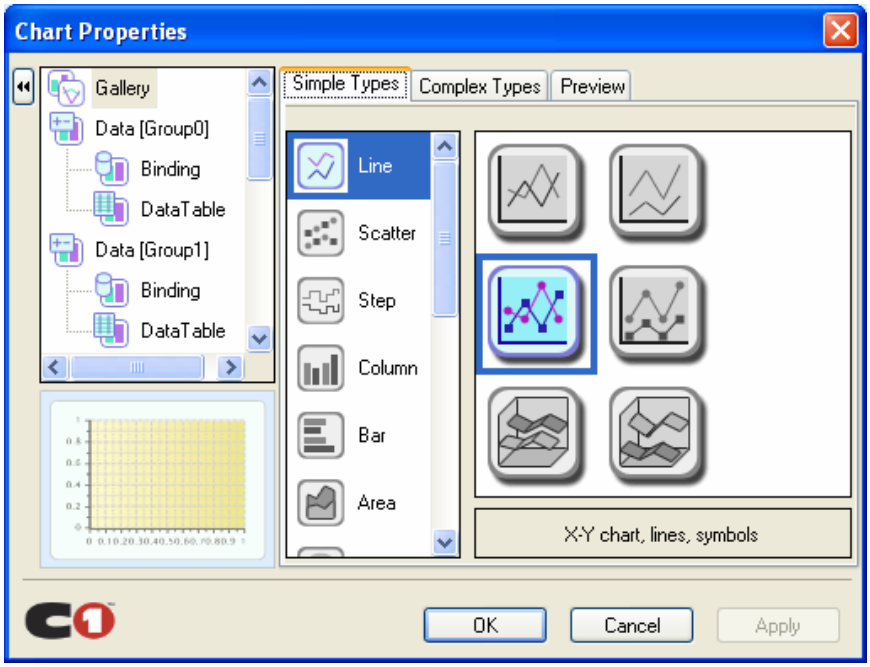
- Select one from forward direction received wave, reverse direction received wave, forward direction filter, reverse direction filter and calculation waveform.
- Click the [START] button to read in the specified cycle and click the [Stop] button to cancel the operation. Display is updated with each read.
- Save the received waveform in the specified file by [SAVE As CSV] button. Trigger level is also displayed.
- Display the RAS information in the STATUS DISPLAY.

Point

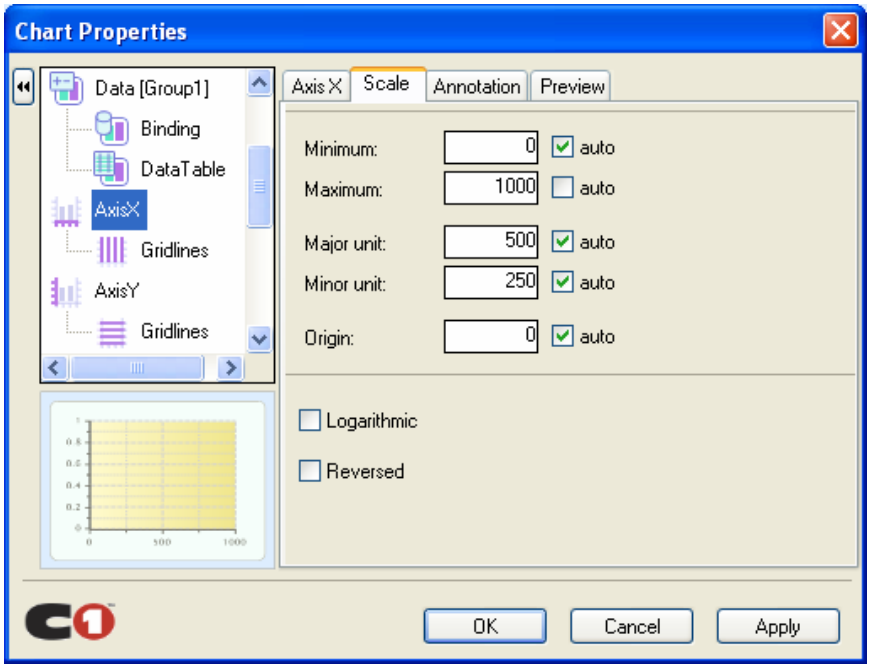
1. Startup is completed within 3 to 6 waves.
2. No peak (amplitude) fluctuation should be observed.
   Otherwise air is mixed in.

9.2. Adjustment of graph scale

※ For adjusting scale, right-click on “Measurement”, “Waves” or “Velocity” screen.



Example) For adjusting the scale of X axis, select X axis, input “Max.” and “Min.” on the scale tab. Click [OK] button.



10. Flow velocity profile

When 6th digit of the type of main unit is 1(Velocity profile measurement option), this function should be available.
Click the"Velocity Profile" button on the Menu screen and the following screen appears.

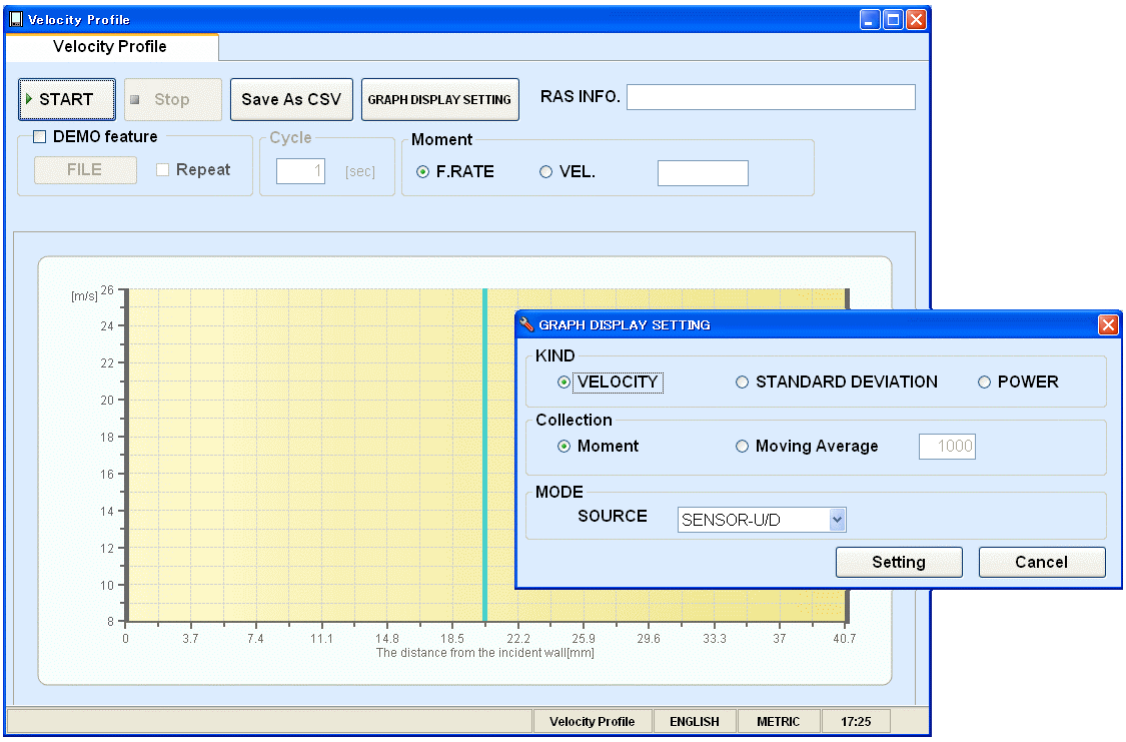


Fig. 10-2 Velocity Profile screen

10.1. Flow velocity profile

Select Tab Page 2 on the Velocity Profile screen and the following screen appears.

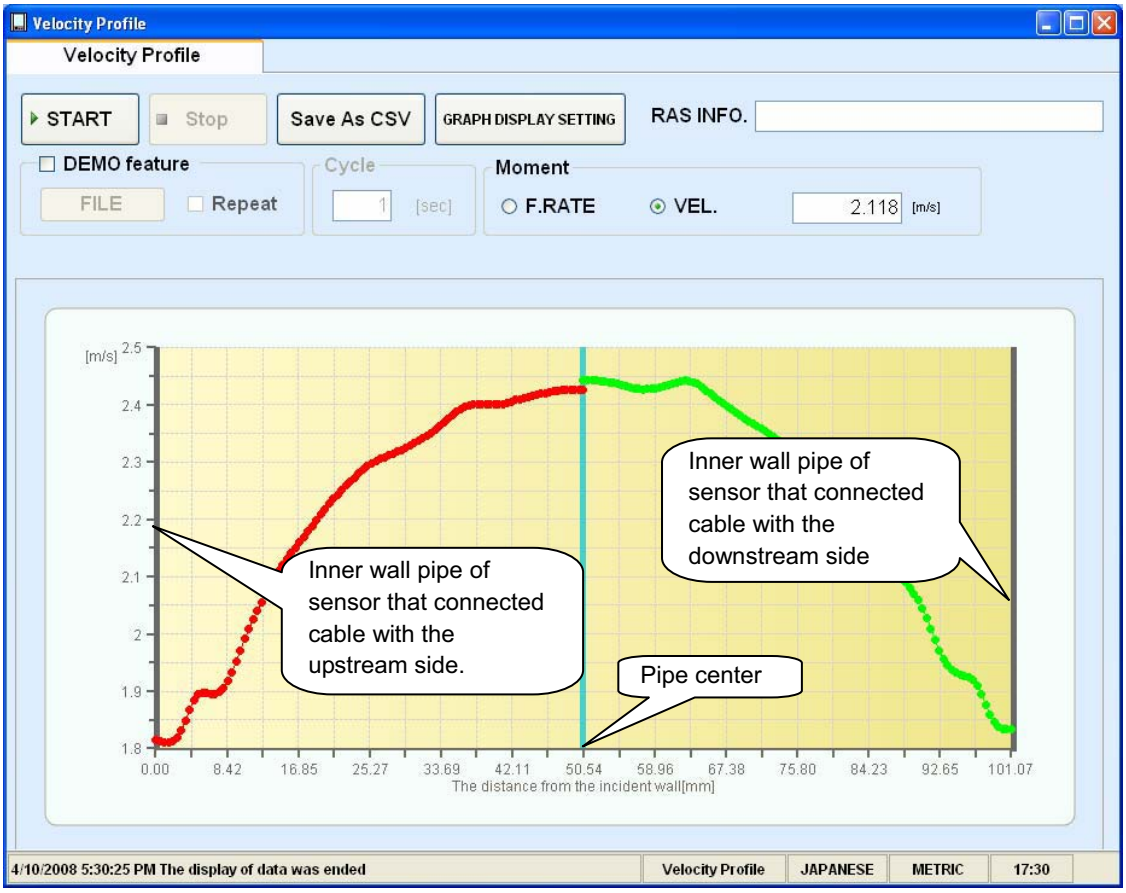


Fig. 10-1 Velocity Profile screen

First, press the “GRAPH DISPLAY SETTING” button, and select either from VELOCITY / STANDARD DEVIATION/ POWER or Moment / Moving Average in the following screen. In case of Moving Average, set the number of times and select one from SENSOR-U/ SENSOR-D/ SENSOR-U/D on the graph display.

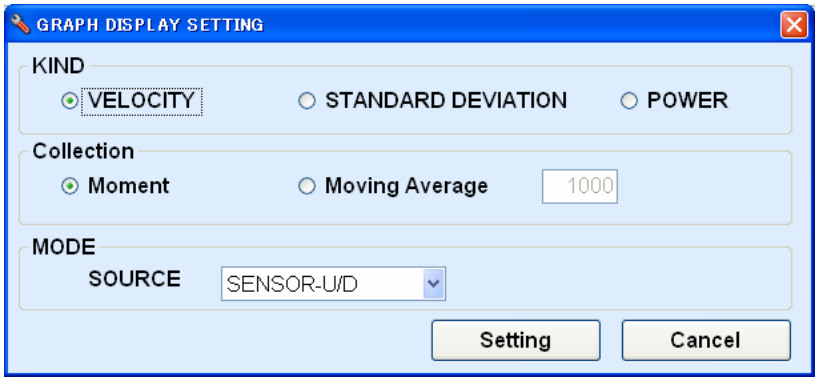


Fig. 10-2 Graph display setting screen

[KIND]
[VELOCITY]
[Collection]
Moment ：Displays data by each read.
Moving Average ：Displays data in moving average with the number of times set by channel in each read data.
[MODE]
SENSOR-U ：Displays only upstream sensor that connected cable with the upstream side.
SENSOR-D ：Displays only downstream sensor that connected cable with the upstream side.
SENSOR-U/D ：Displays both upstream/downstream sensor above.

[Moment]
VEL. / F.RATE ：Displays flow velocity or flow rate with each read.
[RAS]
RAS...Displaying RAS with each read.
[DEMO feature]
Reads the file logged by flow rate or [SAVE As CSV], displays the flow velocity profile.
[Check Box]
Displays repeatedly by setting check box to ON (“☑”).
[OFFSET Calculation]
Displays flow velocity profile detected by the sensor on the upper stream side and that on the lower stream side overlapped at the center of the piping.

- Click the [START] button to read in the specified cycle and click the [Stop] button to cancel the operation.
- Click the [SAVE As CSV] button to save the data in the CSV file.

For saving format, refer to “16.5.3 Flow Velocity Profile” in the manual.

11. QUIT

Click the Quit on the main menu screen or [☒].

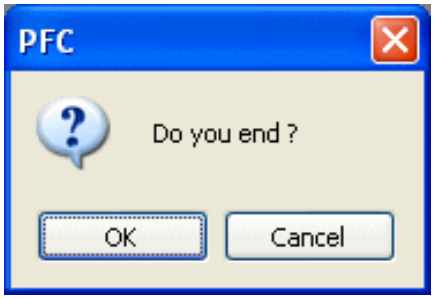


Fig. 11-1 Quit popup screen

12. UNINSTALLING SOFTWARE

For uninstalling, select “control panel” – “add/remove application” from Windows.

13. APPENDIX

13.1. If a USB device is recognized as a COM port

If there is an error of reorganization of a PC device driver, a USB device is not installed properly. In this case, the communication between the flowmeter and the loader software cannot be performed.
This section provides the information about the restoration procedure how to make a PC recognize the USB device.

13.1.1. How to check

Check if there is any recognition error of a device driver according to the following procedure.

(1) Right click on My Computer on the PC side, and then click the [Properties]. Select the [Hardware] tab, and click the [Add Hardware Wizard].

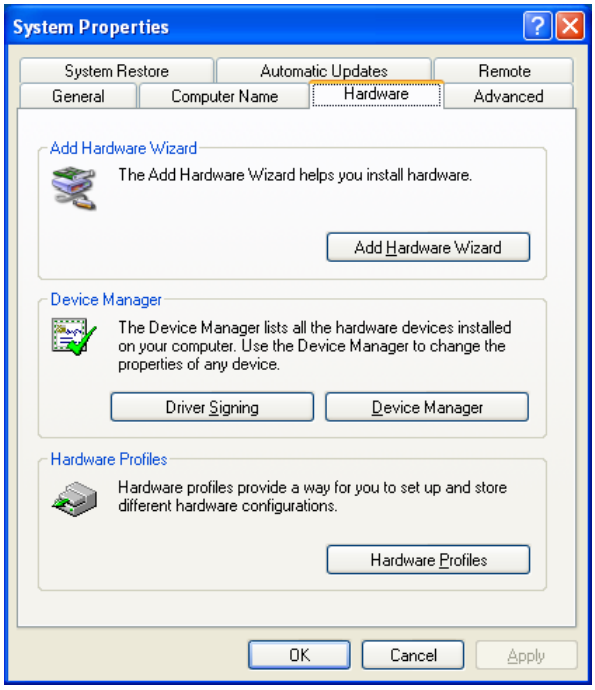


Fig. 13-1

(2) Select the [Ports (COM & LPT)] on the displayed screen.

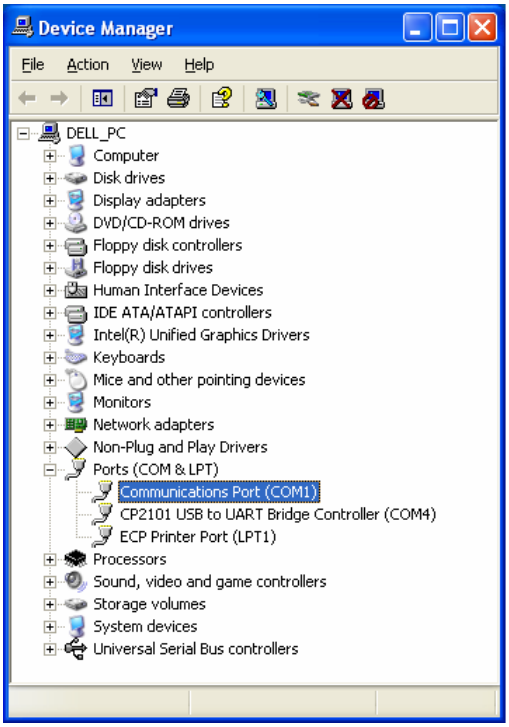


Fig. 13-2

(3) Next, select the [Universal Serial Bus controllers].

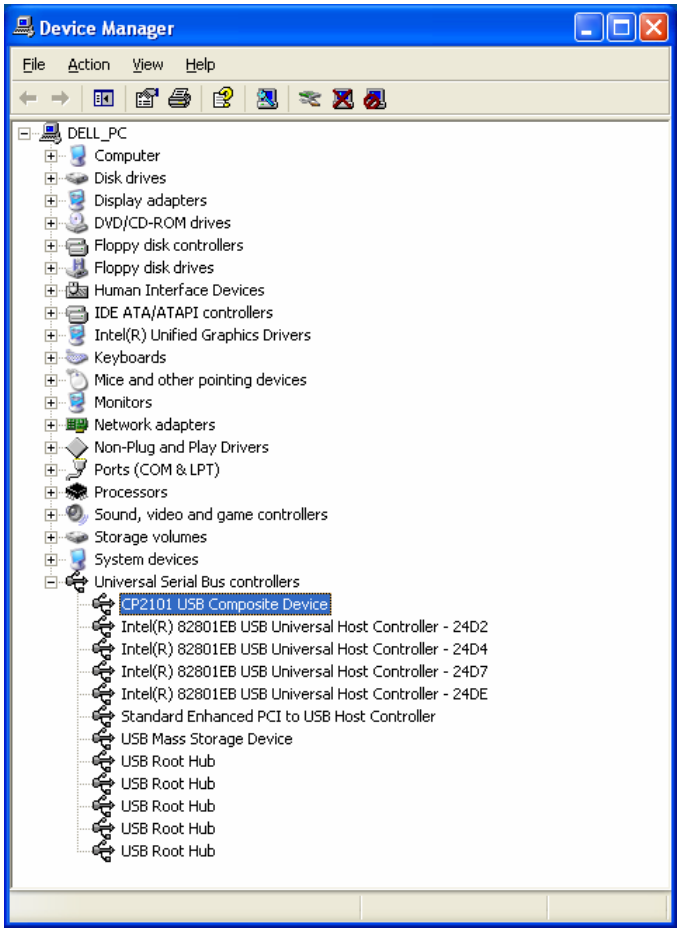


Fig. 13-3

If the items of the Fig. 13-2 [CP2101 USB to UART Bridge Controller] and the Fig. 13-3 [CP2101 USB Composite Device] are displayed when checked the error according to the procedure above, the restoration procedure provided in the next section is applied.

13.1.2. Restoration procedure

Before proceeding to the following procedure, make sure to connect the PC used and the equipment with the USB cable.

(1) Right click on the Fig. 13-3, and then click the [Properties].

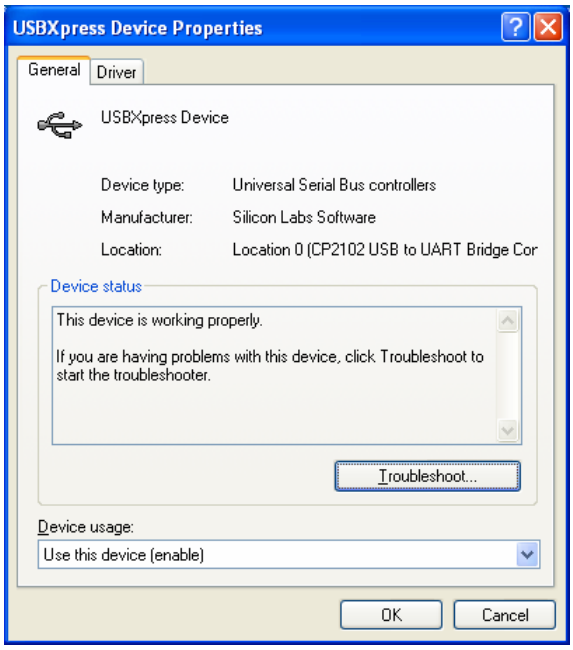


Fig. 13-4

(2) Click the [Driver] tab on the displayed screen.
Then, click the [Update Driver…].

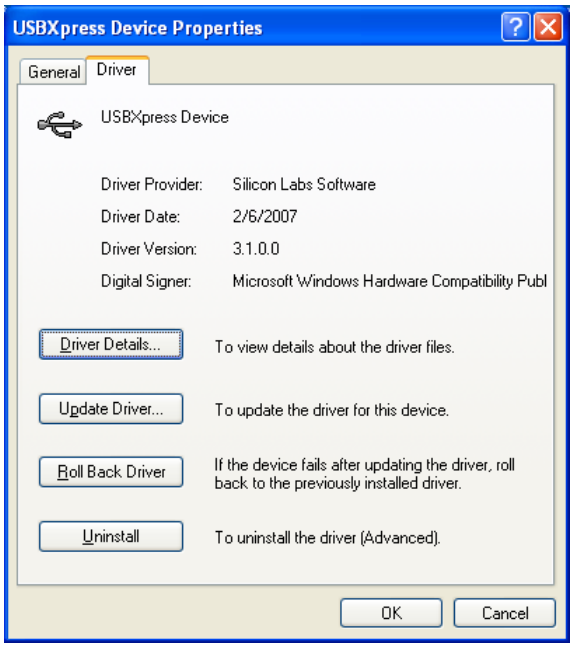


Fig. 13-5

(3) The [Hardware Update Wizard] is launched.
Select the【Install from a list or specific location(Advanced)】, and click the【Next】button to transit to the [Hardware Update Wizard].

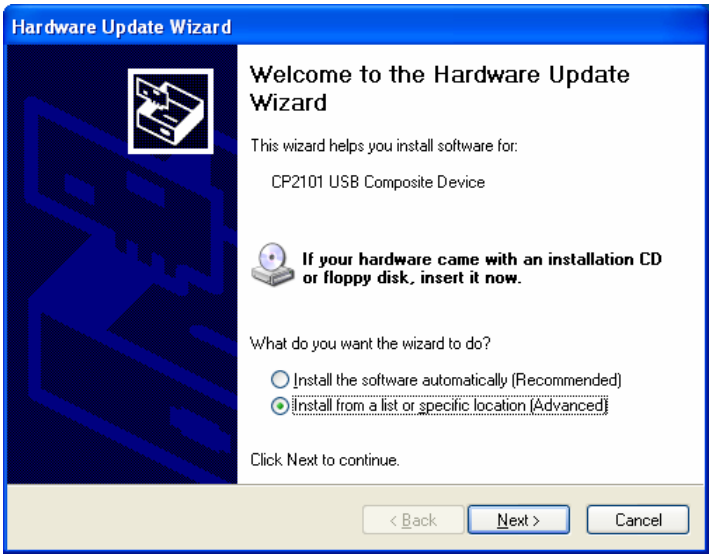

Hardware Update Wizard
Welcome to the Hardware Update Wizard
This wizard helps you install software for:
CP2101 USB Composite Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Fig. 13-6

(4) Select the【Don't search. I will choose the driver to install.】, and then click the【Next】button.

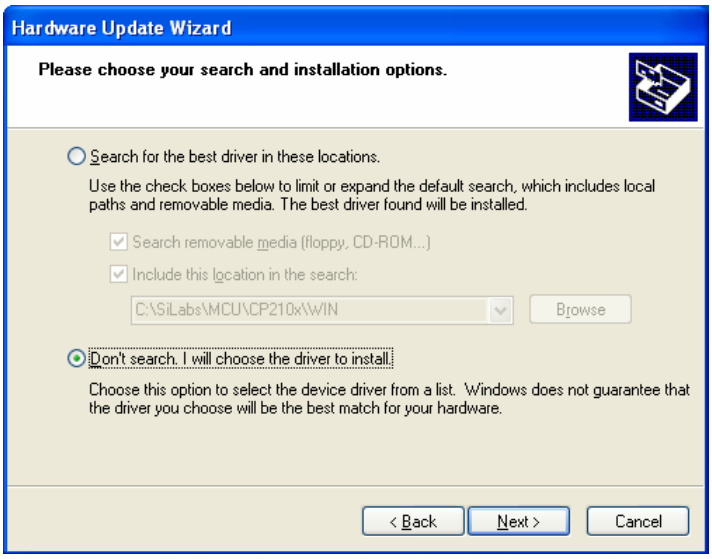

Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\SiLabs\MCU\CP210x\WIN
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

Fig. 13-7

(5) Click the【Have Disk…】button to install a device driver.

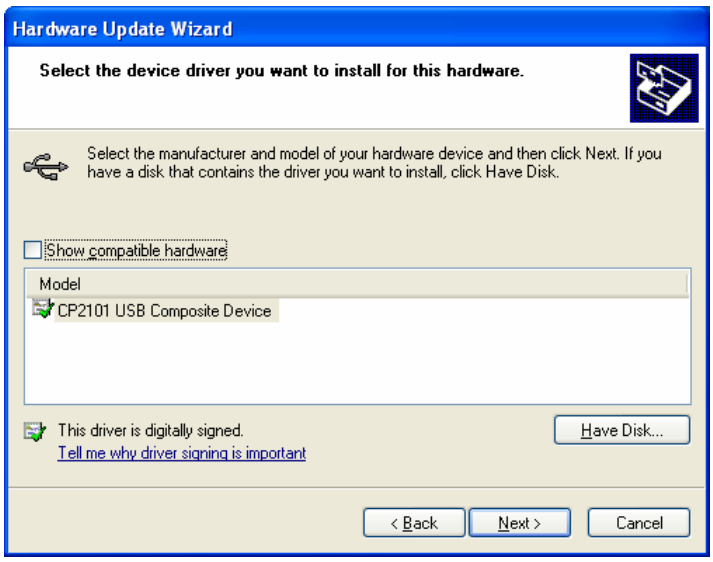

Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
CP2101 USB Composite Device
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

Fig. 13-8

(6) Click［Browse…］button, and select
CD-ROM drive:\ENGLISH\ENGLISH_INST\USBExpress
in the install disk, and then click【OK】button.

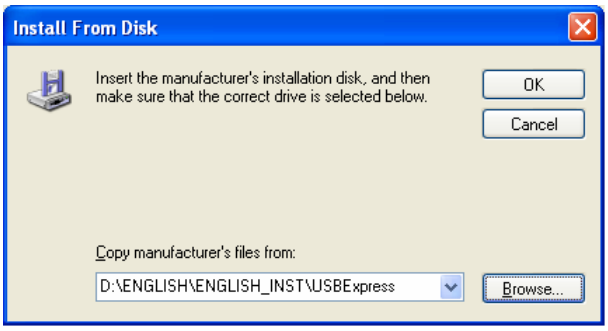


Fig. 13-9

(7) Select【USBXpress Device】that is listed in【Model】box, and click the【Next】button .

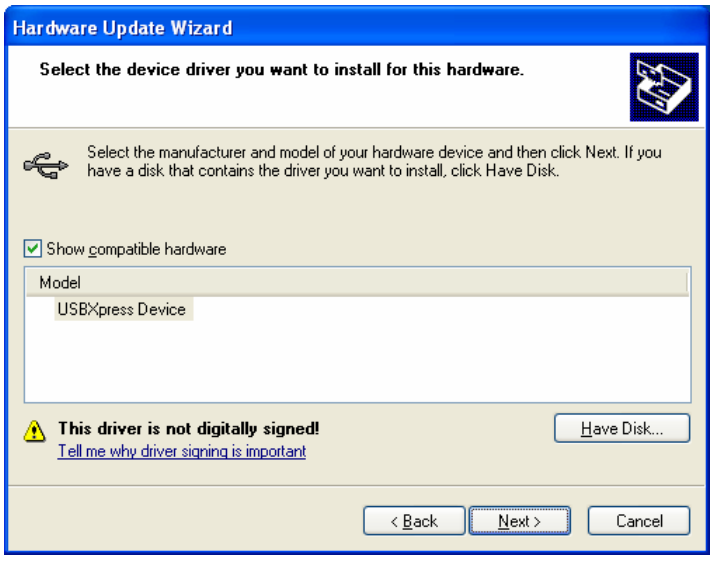

Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
USBXpress Device
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

Fig. 13-10

(8) Now, installation starts. If the warning such as shown in Fig. 13-12 concerning Windows Logo test appears during install, click【Continue Anyway】button.

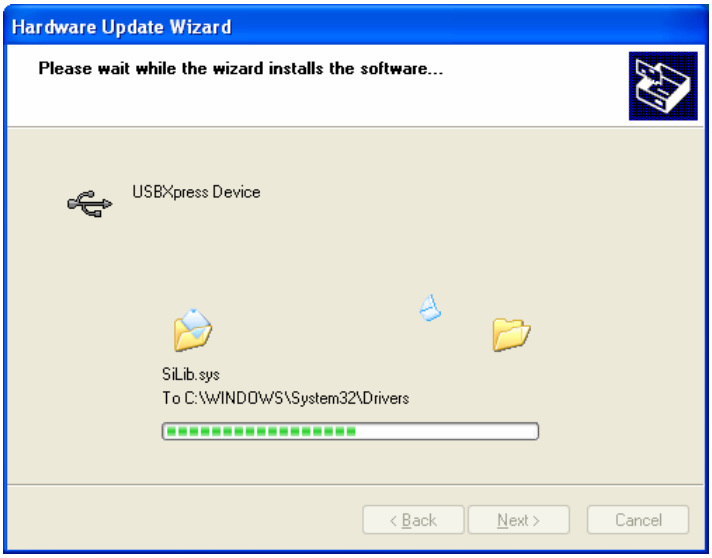


Fig. 13-11

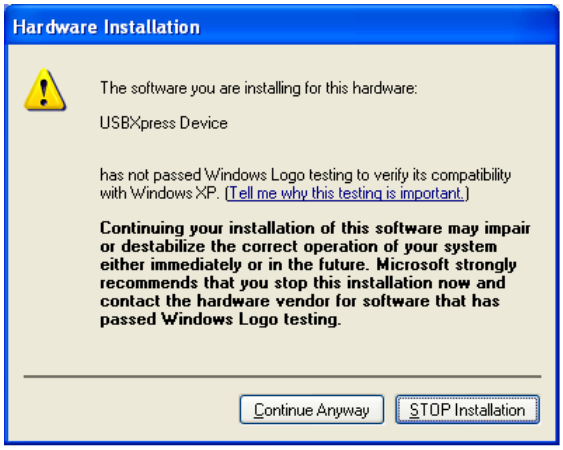

Hardware Installation
The software you are installing for this hardware:
USBXpress Device
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Fig. 13-12

(9) When installation has completed, the completion screen is displayed. Click【Finish】button. Now, restoration procedure for USB communication error has completed.

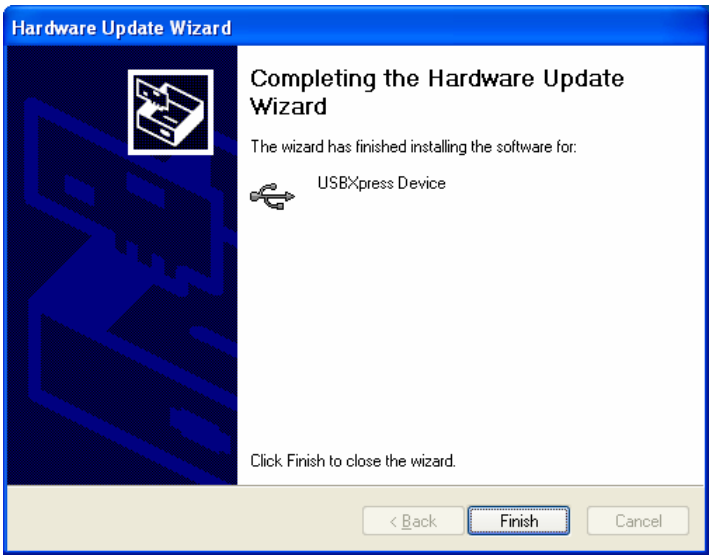


Fig. 13-13

13.1.3. Check after installation

Check【Universal Serial Bus controller】in the Device Manager.

Check if the device type has changed from Fig. 13-3［CP2101 USB Composite Device］in the procedure “13.1.1. How to check” to [USBXpress Device] that is highlighted in the Fig. 13-14 below.

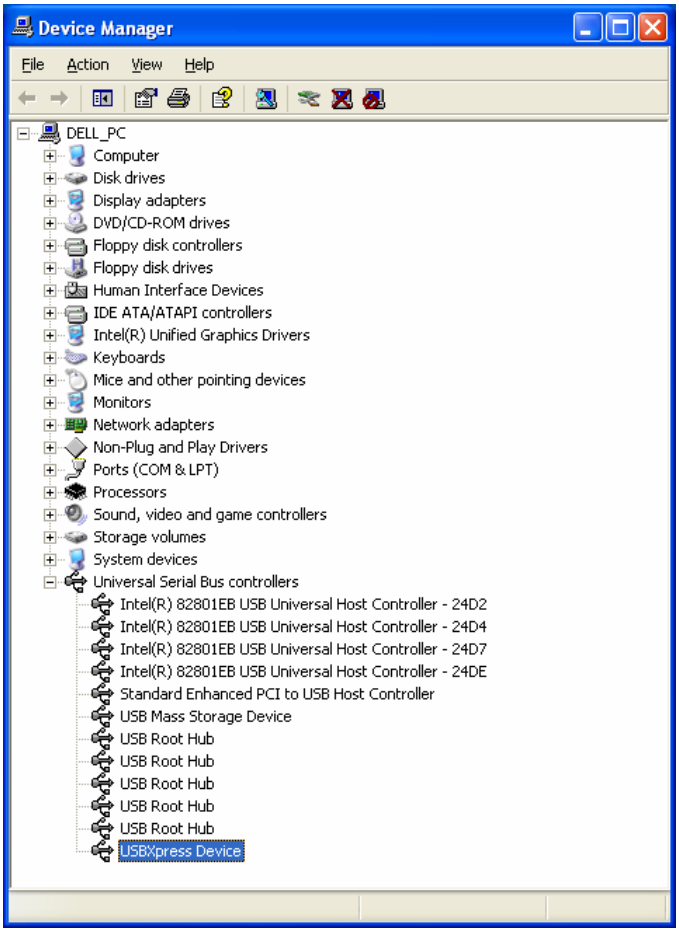


Fig. 13-14

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